103

GLOBAL WARMING (Part 3)

Y 4. EN 2/3: 103-167

Global Warming (Part 3), Serial No....

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND POWER

OF THE

COMMITTEE ON
ENERGY AND COMMERCE
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

SECOND SESSION

OCTOBER 6, 1994

Serial No. 103–167

Printed for the use of the Committee on Energy and Commerce

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GLOBAL WARMING

THURSDAY, OCTOBER 6, 1994

House of Representatives,
Committee on Energy and Commerce,
Subcommittee on Energy and Power,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:35 a.m., in room 2123, Rayburn House Office Building, Hon. Philip R. Sharp (chairman) presiding.

Mr. Sharp. The subcommittee will please come to order.

I am very pleased to have the opportunity today to hear from several administration officials, particularly Secretary O'Leary on recent developments in the effort to reduce greenhouse gas emissions.

In terms of fulfilling the letter and the spirit of the Rio agreement, the U.S. Government is clearly a leader. Along with the other developed countries, the United States has agreed to reduce its emissions of greenhouse gasses to 1990 levels by the year 2000. Moreover, with its announcement last October of the President's National Action Plan, the United States took the lead in identifying and committing to concrete actions to reduce global emissions of greenhouse gasses.

This plan marshals the forces of the Departments of Energy and State as well as the Environmental Protection Agency to find the most cost-effective, flexible, voluntary approaches to reducing emissions. Among the 50 or so programs undertaken in the action plan, one of the potentially most significant is the climate challenge.

Earlier this year, the Department of Energy, under the leadership of Secretary O'Leary, signed an agreement under which more than 80 independently owned electric utilities, as well as hundreds more of the publics and cooperative utilities pledged to reduce their emissions on a voluntary basis. I applaud both the industry and the Department for their joint efforts, and I believe this sort of voluntary cooperative approach to solving this serious environmental problem is preferable to the command and control tradition.

As everyone in this room knows, mandatory legislative controls take years for Congress to adopt, often arrive late to the real world, and force parties to confront each other instead of working cooperatively to solve the problem. We cannot afford to condemn resolution of the climate change issue to this unpredictable, divisive, and costly process without first making a serious effort to work together. Since that time, the United States has also kicked off a domestic joint implementation pilot program to demonstrate the advantages of cooperative efforts between governments and industry which can produce win-win benefits for all participants.

I appreciate that there is controversy surrounding joint implementation policies, both here in the United States environmental community and in the international negotiations. However, I continue to strongly support joint implementation and am pleased the administration has chosen to attempt pilot projects in this area. I want to urge the administration to maintain its effort to persuade the international negotiating committee to launch an international pilot program as soon as possible.

At this point, let me recognize my distinguished colleague from California, Mr. Moorhead.

Mr. MOORHEAD. Well, thank you, Mr. Chairman. Thank you for holding this hearing on the topic of global climate change. This is a topic which has consumed a lot of our time this Congress and which will continue to be an important issue for a number of years.

I am pleased that today we will have the opportunity to hear from and question a variety of witnesses from the administration and industry about the climate change debate. Today I am interested in learning several things:

First, I would like to know about the status of our domestic climate change action plan. I hope utilities and industry are cooperating fully with the administration to make sure that this program is a success.

Second, I would like to know what are the administration's goals in the international arena. I am disturbed about how the debates regarding the adequacy of the commitments fade under the real treaty and the joint implementation are shaping up.

I would hope that we would not assume any additional international commitments until we first find out if our current commitments can be achieved. I also believe we shouldn't make further commitments until we see if other developed countries are truly trying to meet their own commitments or until some of their developing countries are willing to make some additional commitments themselves.

Mr. Chairman, as this is our last hearing of the year, I thank you again for your leadership on this subcommittee. I look forward to the testimony of the witnesses.

You know, we have worked together for a long, long time, Phil, and we worked on energy issues because I was the ranking member of this subcommittee for many, many years. I think we have gotten out a lot of good legislation.

Mr. SHARP. Especially during IPCC, you were absolutely essential on that.

Mr. MOORHEAD. But we have worked together in a nonpartisan basis much of the time, and certainly your contribution to this committee will long be remembered.

Mr. SHARP. Well, thank you very much. Appreciate that.

Madam Secretary, we are ready to hear from you, certainly appreciate your changing your schedule and being with us this morning for this hearing.

I might indicate to our audience, as they may know, because we have a very important joint session to hear from President Mandela at 11 a.m., the Secretary, as a Cabinet officer, will be in attendance at that as well as Members of the House, so we will take her testimony this morning and then recess until 1 p.m. to get our other panelists.

Madam Secretary, excuse me for interrupting.

STATEMENT OF HON. HAZEL R. O'LEARY, SECRETARY, DEPARTMENT OF ENERGY

Secretary O'LEARY. Thank you, Mr. Chairman and Mr. Moorhead.

I am delighted to be here today to report progress on the Department of Energy, and most importantly, our administration's actions to implement the global climate change plan.

Before I begin, much in the vein that Mr. Moorhead has started, I would like to compliment this committee for the work done in crafting the Energy Policy Act passed in 1992, and to this chairman especially, who in his final hearing has to suffer a bit of praise, and I want certainly——

Mr. SHARP. Suffer, suffer.

Secretary O'LEARY. Well, I know that you are not comfortable with that, Mr. Chairman.

I want on behalf of our colleagues in government and industry, to thank you for the grace and the good humor with which you have led this committee, thank you for the intellectual prowess. Often working with Mr. Moorhead, as he has just indicated, to find that nonpartisan balance that gives us the opportunity to move forward with a series of challenges and initiatives that sometimes look so tough and intractable that people have thought we could not go forward.

Many have said, Mr. Chairman, that we cannot imagine how we will function without you. I am clear that we will function with you in different roles, and I very much look forward to it. But I need to say on a very personal basis how much I have enjoyed working with you for practically 17 years. My colleagues from the Department of Energy join me with others in the industry who I know all day today will be thanking you for your leadership.

And at the same time, we want to thank Mr. Moorhead, because it does not happen without a bipartisan effort. You have evinced that spirit to help this chairman be very successful, so I thank you both.

We should also be thanking you for the flexibility within the Energy Policy Act, that really has permitted us to design and craft a global climate action initiative which is both flexible, cost-effective, and I believe can get the job done. Early last year when we were testifying on the plan, it was difficult for some to understand that the basis of the plan is in fact the Energy Policy Act.

My colleagues, with a great deal of pride, want me to present and share with the public today our administration's United States of America's Global Climate Action report filed on time in Geneva. It is a very spiffy report that outlines the very flexible initiatives that will be used to meet the climate goals to which we committed.

I want very quickly to answer the questions that you have asked and give you an opportunity to ask questions of me.

First of all, I want to say that the good news in my mind is that we are off the paper and at the point where we are designing feasibility or assessments internationally and moving this plan.

As you indicated, Mr. Chairman, when we were under the tent on the mall on the occasion of the signing of the some 800 utilities to the Global Climate Challenge, which draws the utility industry into this effort. The flexibility of permitting the private sector to simply take the mark of a goal and move with it, I think, is what has made this plan a success.

You have asked for a review of those activities, and I want to do it within the context of the budget because so many quite correctly have deep concern that the cuts in the budget for energy efficiency and renewable energy exacerbate our ability to accomplish the goals set out in the plan.

You also asked me to address the schedule for section 1605, which is the reporting baseline that will permit us to measure accomplishments, and I will address that. I will also touch very briefly on the science, but I want to address that issue in a very pragmatic way. I need to start really with a review of the tonnage score card.

You will remember when we came to town we needed a 212 million metric ton reduction in greenhouse gas emissions to meet the mark for the 1990 measure at the beginning of the 21st century. EPACT straightaway gave us 29 million of those metric tons. The early actions in our administration gave us another 77 million metric tons, and the remainder needed for the plan designed here was 106. The plan crafted and presented gave us 109. Then we went into the budget struggle and debate.

You may recall that the administration across the board had freezes on discretionary programs, and in point of fact, the way those freezes were scored, the Department of Energy overall took a 10 percent cut in its budget. Nonetheless, we went forward with a very vigorous proposal which the Congress reviewed. We proposed an increase of 25 percent in renewables and 45 percent in energy efficiency, and I came to the Congress very openly and said the bottom line cut, in my view, was $150 million. We took a bigger hit than that and went back to figure out how we could deliver on the program.

The good news, in my mind, and there is good news, was that that program got nearly a 16 percent increase at a time when the Department's budget was under tough attack. I think that is a strong signal.

The other good news is that in planning to take those budget cuts, we really put our low-priority programs over the side ourselves, focusing on those programs that could deliver. But the shortfall, nonetheless, is one with which people ought to be concerned.

I want to turn now to two programs that were not scored in the plan because we didn't know how to score them, and those were the voluntary programs that we saw being signed under the tent on the mall in the early spring.

The Climate Challenge that involves the electric utility industry will just be scoreable at the end of this month as 1605 guidelines are completed and ready for people to report to. There will be a base case to measure emissions saved. I expect to be signing real plans, not plans for agreements, but actual plans for implementation at the end of this month in New Jersey and several other States.

We have scored, we believe, very conservatively that the global climate initiative with the electric utilities can give us from 10 to 20 million metric tons. Let's take the most modest of that. That is 10 million metric tons, which gets us nearly halfway to the shortfall.

I want to move now to Climate Wise. This may be very confusing to people. It is to me. Climate Wise is the name we use to discuss another voluntary program with large industrial energy users who are, quite frankly, the largest emitters of greenhouse gasses.

With only seven companies signed on to that program, they have pledged 10 million metric tons. These are very large companies, such as Dupont, Johnson and Johnson, AT&T, companies whose manufacturing processes are quite energy intensive. So I believe we can get there on these programs that have been unscored.

What are we doing further to make up the shortfall? Certainly, not sitting back. What I think we have got are some concepts and plans now ready for implementation that will permit us to prove the concept that flexible programs do work and are most cost-effective. The Climate Wise program will cost us only $2 million in the Department of Energy because the industry will do the work.

Let me talk for a moment about the 1996 budget, over which people have rightly some concern. As you well know, we committed and sent to OMB our first budget mark, which is now being negotiated. That budget mark generally tends to support again a very aggressive program for energy efficiency and renewables and certainly for our global climate initiatives.

I think you will be seeing the play between the agencies and OMB as we go forward, and you can count on our vigorous pushing of these programs, especially those that have given us the greatest measure in terms of our voluntary efforts.

Let me talk now about how we are doing internationally.

Mr. Moorhead, you raised the question, and rightly so, of not having the United States move ahead aggressively while others lag and wait to see what will happen. You should know that on the dates when all of these reports were to be filed, all nations who had reports due, save two, did file them. And most didn't have, I believe, the aggressive kind of focus that we had. Another country, Austria, will be filing shortly, and the others will as well. So that gives me the indication that there is not only the desire but there is the commitment to meet these timetables and to implement, not merely to sign the accord.

I would like to now talk very briefly about joint implementation pilot programs and, as usual, I brought with me a few toys. I want to point first of all to the picture of me with the dripping honor mark on my forehead. The people in that picture are villagers in a village in India called Danawas. It is a village that is quite remarkable because it has become a test bed for appropriate technology and energy efficiency, and is a village community where up until 2 years ago there was no electrification.

You should know now that the electrification is provided generally by appropriate technology. In that village, the agriculture is supported by a pump that irrigates fields, and that pump uses biogas, but more importantly, irrigation of those fields now permits this village to earn money outside of its own needs so that the village itself is not only empowered but it is able to plan for its future.

I had the occasion when I was there to present to that village, which now has its thoroughfares and its temple lighted, 50 solar lanterns exactly like the one you see here. The interesting piece—you can't see this lit, but it is lit. If it were dark, I could do this for you.

The interesting piece about this solar lantern is that when we went off to India we thought that the market penetration in India under a joint implementation pilot program might be for $1 million worth of such lanterns in villages. It would make dramatic difference in the lives of the people there because, as one example, it lights up a home at night and permits a student who might be learning and reading for the first time after a full day's work, to now be empowered to learn and to read.

One deal was signed there for $1 million worth of lamps to be introduced into villages like the village in Danawas. After we left, we were told that the market penetration for 1 year is expanded now to $10 million for such lamps.

This is simply one example of a program that really is in action, because these lamps are now being deployed in villages in India. Let's take it a step further. It is good for U.S. industry, it is good for the economy, it is, of course, excellent for the environment.

This is a very simple system which will permit villagers to be trained to understand and know how quickly to repair a system that with 8 hours of the solar collector in the sunshine—and trust me, there is ample sunshine in India—provides 8 hours of lamp light at home and provides work for Indians as well. That is just one example of a joint implementation pilot program already signed and up and running in India.

I have another one. This is a steam trap. For those of you who know about industrial processes, this strange little gizmo here, in the center of what really looks like a valve or a fitting around a pipe, simply maintains and holds the steam in a long pipeline and keeps it at steady pressure. Without this steam trap, what you get is the leakage of steam, the reduction of power, and you also get a very unsafe condition, as many of us who have worked in manufacturing processes know.

This is a very simple device, which if attached to equipment in a place, say, like a textile plant in India or Pakistan, can reduce the energy consumption dramatically, improve safety, and also help us on our Greenhouse Gas Emissions Reductions Project. This is a joint program entered into by a manufacturing company out of Michigan, with a contract signed in Bombay while I was there, and gets the work done. It qualifies under the rubric that we are now establishing for review of joint implementation pilot programs. This is jobs in America, this is jobs in India, and will work in any other industrial process. Pretty simple stuff as well.

Finally, I want to talk about one other assessment program now ongoing which platforms another pilot program. In districts in China, the issues there are leakage in the gas pipeline; old gas pipeline designed to take wet gas in decades before whose couplings are done with hemp and other natural fibers. The issue there is the loss in the gas pipeline amounts to about 25 percent, which is a tremendous greenhouse gas emitter.

This is a collaborative program, speaking of collaboration, coming out of the State of Illinois, with Illinois Power and in conjunction with the State Energy and Natural Resources Office there. This is a proposal under one of the plans submitted by one of our utilities, but the dramatic piece here is that by simply bringing in pretty low technology, USA couplings, we can reduce that loss in that pipeline at no cost because, in point of fact, there is an energy savings. The annual reduction in emissions is 68,000 metric tons, simply in one province in China. These are activities, this is not stuff written down, we are ready to go with these programs and these projects.

I would simply end this discussion by saying that on the two sustainable energy development presidential missions we have done, in furtherance of these goals and in furtherance of economic expansion of the United States and of the countries in which we visit, and with a clear eye on what is happening in developing countries—as their per capita income increases, so do their energy uses per capita increase more dramatically than OECD countries—that we have interest so high, that on the first mission to India we had 40 people.

When we arrived in Pakistan, there were 80 individuals on the mission. And the wonderful thing about this mission is not your typical, simply large energy development projects, but high-tech, low-tech, appropriate technology, a mix, and more importantly, enriched by the addition of our nongovernmental organizations seeking to meet with the nongovernmental organizations, generally.

If I had brought another picture, it would be of the Secretary of Energy with the Prime Minister of Pakistan, whose country began, as we arrived on a 5-day mission, very much focused on large megawatt deals. In the 5 days that we worked there, we began to show the prime minister and her energy and economic team the value of ensuring that energy efficiency and small projects were accorded the same respect and public play.

At the end of a signing ceremony, where $4 billion worth of deals were moved through the first phase of energy reform in Pakistan, the project that received the most interest in the press and certainly from the prime minister was a deal signed with Agra Electric for a 10-megawatt plant that uses for its energy source, hulls from rice.

The win is obvious. India, China, Pakistan produce rice. What is left over is waste, is the agriwaste, in this instance, rice hulls, but it could also be stalks from cotton, and on and on.

This works. There is a great desire to see it work. It is cost-effective, and we are ready to roll. I would submit to you that we will have pilot programs for joint implementation running the gamut, ready for review by the Secretariat, and we will move them as quickly as possible.

I will close by saying that 1605 has moved not as rapidly as you wanted it, but it has moved most especially with the collaboration that makes it, first of all, realistic, it is cost-effective and gets the job done. You asked also for some discussion on the science of greenhouse gas emissions, and I have a paragraph or two in my testimony.

I will say to you that I am not a scientist and I do not pretend to espouse the science. I have read the testimony and, more importantly, have been briefed by our own scientists at our laboratories who have been involved in doing this work.

I am clear that their pronouncements are rational, but from my own personal experience I know that the rationality is there because it is expressed to me by the Mayor of Decin in the Czech Republic. It is expressed to me by the president of the South African Republic who is concerned not yet about greenhouse gasses but about the health effects of emissions. And in each country where we are visiting, we get the call for these joint implementation programs because they make a difference in the lives of the people in those countries.

And so while people quarrel the science, I will very pragmatically go about my business and the business of the Department, which is to find the need and to fill it and to fill it in the very best way and the most cost-effective way. We are not dragging people on these missions. They want to come.

Thank you, Mr. Chairman.

[The prepared statement of Hon. Hazel R. O'Leary follows:]

TESTIMONY OF
HAZEL R. O'LEARY
SECRETARY OF ENERGY

Mr. Chairman, members of the Subcommittee, it is a great pleasure for me to appear before you today, two weeks before the one-year anniversary of President Clinton's release of the Administration's Climate Change Action Plan. The Administration has made progress on implementing the Plan this past year. The Department of Energy's actions this new fiscal year will continue the policy momentum to achieve our overall goal of returning U.S. aggregate net greenhouse gas emission level to its 1990 level by the year 2000. In my testimony today, I will highlight the Department's accomplishments and the steps we are taking in both the international and domestic arenas. I am particularly excited by the many "win-win" situations we have been able to foster in just this past year. I am confident that this approach will lead to significant reductions in greenhouse gas emissions and to the advancement of U.S. competitiveness and sustainable development goals.

Progress in Climate Change Action Plan (CCAP) Implementation

Our Administration has launched a major innovation in environmental compliance that could prove to be a model to address other environmental issues in the future: government sets the overall environmental goals, and industry is given the flexibility to find the most cost effective ways to meet the goals. It builds on the authority this Subcommittee created in the Energy Policy Act of 1992 to encourage voluntary actions to reduce or sequester greenhouse gases.

The Department has made significant progress in implementing the President's plan since we last testified before this Subcommittee. We have spent this time designing the programs in close collaboration with our stakeholders and laying the foundations for an aggressive start this fiscal year. We have consolidated several actions and have ensured that they complement existing efforts -- especially implementation of key provisions of the Energy Policy Act. Early feedback from our stakeholders suggests that many people are eager to participate in these exciting voluntary programs.

Some of our programs were attracting industry volunteers even before new funding became available. For example, the Climate Challenge provides individual electric utilities the opportunity to design and implement programs to reduce, avoid or sequester greenhouse gases. Mr. Chairman, as you remember from our tent on the mall signing last Earth Day eve, the Climate Challenge has drawn together over 800 utilities -- representing over 80 percent of U.S. generating capacity -- to commit to specific targets or specific projects to reduce or sequester greenhouse gas emissions. Some will commit to reducing to or below their 1990 levels, while others will commit to reducing the growth in emissions that might otherwise have occurred, while others may even invest money in reduction opportunities outside of their own systems. I am extremely excited by how energized the industry is over the prospects of this program. I hope to be joining our first volunteers for signing the first agreements later this month. Now that the voluntary reporting system is nearly complete, detailed agreements between the Department and many other individual utilities will be announced before the end of the year. I believe that the Climate Challenge could become the model for environmental policy making -- the Government establishes the goals and accounts for reduction compliance while the private sector utilizes its ingenuity to find low cost solutions.

In the same voluntary spirit as the Climate Challenge, the Department of Energy and the Environmental Protection Agency created the Climate Wise program for other industries. Under this program, companies and soon cities will have the opportunity to design individual, flexible programs for greenhouse gas emissions reductions or sequestration. Our agencies will provide technical assistance and recognition for their efforts. Major industrial partners have already signed up -- they represent more than 3 percent of total industrial energy use. These companies alone have pledged to reduce their emissions by 10 million metric tons of carbon equivalent by 2000.

The Motor Challenge is also off to a promising start. As you know, two-thirds of all the electricity used in the industrial sector is used to run motors, accounting for about 100 million metric tonnes of carbon. This partnership seeks to increase the market penetration of highly efficient industrial motor systems in order to reduce this level of emissions. We established a national technical assistance service, held workshops, and published a request for showcase demonstration proposals just this week in the Federal Register. To date, 105 partners are participating in this program - including such industrial giants as General Motors, Ford, Dow, and Johnson & Johnson.

Now that the fiscal year has begun, we are poised for an early roll-out of many of the Plan's actions. While we did not fare as well in the appropriations process as we had hoped due to the tight budget climate, we believe that we have sufficient funding to demonstrate the viability of our approach with an aggressive start. We received $107 million out of a total of $208 million requested. We received virtually our entire request for continued deployment of renewable sources of energy from the Energy and Water Development Appropriations Subcommittee. These clean energy supplies should help displace carbon generating energy supplies in the longer term. We received an increase of about 15 percent over last year from the Interior Subcommittee for energy efficiency programs, which represents the largest increase of any Interior account this year. A table (Attachment 1) summarizing fiscal year 1995 program funding is attached to my testimony. The Administration continues to support the goals of this important program. We will, of course, continue to request the funding that is needed to assure the success of the program in the future. We thank the Committee for your support.

We look forward to rapid implementation of many other programs. We will use innovative incentives, such as pooling utility rebates which have worked so well to encourage manufacturing of more efficient refrigerators and will now do the same for commercial equipment. More rapid development of appliance standards will complement that effort. "Rebuild America" will work with communities, utilities, the energy service industry, State and local governments, manufacturers, and consumer groups across this Nation through grants, technical assistance, and collaborative partnerships to rapidly increase the efficiency of our commercial buildings. Finally, we have formed several renewable energy consortia among industry, utilities, consumers, and government that will accelerate penetration of renewable energy technologies.

Voluntary System for Reporting Greenhouse Gas Emission Reductions

The credibility of our innovative environmental compliance approach rests on a foundation of accurate accounting, so let me provide an update on the development of the Voluntary System for Reporting Greenhouse Gas Emission Reductions, called for under Section 1605(b) of the Energy Policy Act of 1992. This system will play a major role in allowing us to measure how well we are meeting the goals of the various Climate Change Actions by providing a repository for private and public participants to voluntarily record their accomplishments on an annual basis. They can record their organization's annual greenhouse gas emissions and the reductions made each year.

Because of the innovative, voluntary nature of this recording program, we quickly determined that we could only be successful if we provided multiple and varied opportunities for public comment in developing the program. After collecting written public comments in the Summer of 1993, the project team, working with the Environmental Protection Agency and the Departments of Agriculture and Transportation, conducted six workshops late last Fall. The message from the workshop participants was clear -- design a flexible, simple system that would not involve significant transaction costs to volunteers, and do it in a way that would allow the reported data to be transparent and reviewable for a variety of uses. We concluded that we needed to design an accurate, workable, and cost-effective system to which people would voluntarily report -- but we could not let the perfect become the enemy of the good.

The Department published Draft Reporting Guidelines and Technical Supporting Documents in early June, followed by a public meeting to collect comments in late June. By early August, over sixty organizations submitted written comments on the draft. Most comments were very supportive of the design of the guidelines. Some comments continued to point out that the design of the data forms must allow effective third party review of the quality of the data. Many of the responses suggested very useful technical improvements to the supporting materials.

I am pleased to say that the project team has completed its detailed consideration of the comments and that an announcement of availability of the final Voluntary Reporting Guidelines and Supporting Technical Documents will be made by October 19. Based on the extensive comments we have collected, these Guidelines and Supporting Technical Documents, and the Energy Information Administration's reporting forms, will lead to a system that will be used extensively on a voluntary basis, as this subcommittee had envisioned when it designed Section 1605 of the Energy Policy Act.

Most importantly, I believe that this system will create an incentive for voluntary reporting of emissions reductions and sequestration and encourage the private sector to implement new and additional cost-effective actions. The schedule for producing these guidelines, their Supporting Technical Documents, and the Energy Information Administration's reporting forms for the 1605 project are attached to my testimony (Attachment 2).

Now I would like to turn your attention to the international side of our climate strategy.

The Importance of Working with Developing Countries

Our Administration understands that our climate actions alone will not solve the climate problem. While developed countries have been the source of most of the emissions since the beginning of the industrial revolution, their relative importance has been changing. Most of the emissions of the 21st century will originate in the developing world.

In work conducted at your request, Mr. Chairman, although the Energy Information Administration (EIA) estimates that between 1970 and 1992 energy-related CO_2 emissions of the Organization for Economic Cooperation and Development (OECD) countries increased absolutely, in percentage terms these emissions declined from 61 percent of world carbon emissions in 1970 to 49 percent in 1992. Ten of the non-OECD countries accounted for three-quarters of the non-OECD energy use and carbon emissions in 1992. This represents 38 percent of world carbon emissions and 35 percent of world energy consumption in 1992.

Over the 1970-1992 period, the gross domestic product of the non-OECD region grew by 90 percent, energy demand by 120 percent and carbon emissions by 99 percent. This contrasts sharply with the picture within the OECD where GDP grew by 83 percent, energy demand by 36 percent, and carbon emissions by 24 percent. With similar economic growth rates over this period, the OECD region was much more successful, due both to structural change and to the introduction of advanced energy-efficient technologies, in decoupling energy demand and carbon emissions growth from improving living standards than was the non-OECD region.

This spectacular growth in emissions in the developing world, the Former Soviet Union, and Eastern Europe is expected to continue. The Energy Information Administration has run various scenarios out to 2050 with different population growth rates and resource availability assumptions. The range of projected OECD carbon emissions is between 4.1 billion metric tons and 5.1 billion metric tons in 2050. The rest of the world, on the other hand, ranges from 7 billion metric tons to 28 billion metric tons in 2050. It must be recognized, however, that the Former Soviet Union and Eastern Europe have made emission reduction commitments under the Framework Convention consistent with those of the United States.

The International Energy Agency has also studied the potential for growth in energy use and related emissions. It concludes that most of that growth occurs in Asia. China's emissions, for example, are forecast to grow from 2.4 billion metric tons in 1990 to 5 billion metric tons in 2010 -- doubling its emissions in only 20 years. Other East Asian countries together will more than double their emissions over that same period, from 1 billion metric tons in 1990 to 2.6 billion metric tons in 2010. South Asia is also a major growth region. The International Energy Agency forecasts a growth in that region's emissions from 0.7 billion metric tons in 1990 to 1.7 billion metric tons by 2010. The remaining countries of the developing world also experience emissions growth, about a doubling -- from 2.4 billion metric tons in 1990 to 4.7 billion metric tons in 2010.

In annual percentage terms, this growth in the developing world means that by 2010 the developing world will be responsible for 44 percent of global energy related CO_2 emissions, while the OECD is responsible for 42 percent in that year. This contrasts sharply with the picture in 1971 when the OECD countries produced 61 percent of these emissions while the developing world generated only 17 percent of the emissions.

These numbers illustrate why climate change is a global problem. Without the commitment of the developing countries, OECD emission reductions will be more than offset by those of the developing world. Forming a global partnership for mitigation requires that means must be found to foster economic growth in the developing countries while decoupling that growth from CO_2 emissions growth. Advanced western technologies will help solve this dilemma, but new ways need to be found that merge economic interests of all countries with the requirements for increased environmental protection globally. Further, when compared to the United States, it has been the experience of some of our private sector companies, such as the AES Corporation and the New England Electric System, that more cost-effective opportunities to reduce or sequester emissions exist in developing countries. They have found opportunities abroad that cost one or two dollars per ton of carbon as compared to tens of dollars per ton in the United States.

Given the tight fiscal situations governments face, we must begin to encourage the private sector to use its resources in ways that foster these goals. Joint Implementation projects might be large-scale power plants that are more efficient and emit less greenhouse gases than the more conventional alternatives. They also might be a myriad of smaller activities including reforestation efforts, relighting urban areas with compact florescent bulbs, replacing malfunctioning steam traps in district heating systems with state-of-the-art steam traps, or providing solar-powered refrigerators to remote villages so that medicine can be stored.

There are opportunities for all groups, both big and small, rich and poor. In my view, global cooperation is a prerequisite for sustainable development. Sustainable development requires our balancing of our environmental and economic needs, both here and abroad. U.S. technologies and services provide a means for growth to occur without harming the environment. Consequently, by bolstering U.S. industry's access to and competitiveness in burgeoning markets, we promote growth in a responsible manner.

Joint Implementation and Presidential Energy Trade Missions: Leveraging Opportunities

The Climate Change Convention describes an international cooperative program called Joint Implementation. Joint Implementation is meant to stimulate public and private sector interests in different countries to work together to reduce projected greenhouse gas emissions and to support sustainable development projects in developing countries and countries with economies in transition.

One of the roles of the Department of Energy is to assist domestic private sector interests and partner countries to identify opportunities and to proceed to project implementation. We will also provide technical assistance, as our resources permit. And as I will now discuss, we will continue to develop umbrella agreements with interested governments that will foster the conditions for the formation of Joint Implementation projects and for cooperation with developing countries.

Presidential Missions to India and Pakistan

To help engage more nations in the global effort to reduce greenhouse gases, the Department of Energy has made climate change a key topic of our recent trade missions to India and Pakistan. These nations are illustrative of why we need to engage developing nations in the effort to combat climate change. India needs to add 60,000 megawatts of electric power by the year 2000. Pakistan's development is hobbled at times by up to a 33 percent shortfall in meeting energy demands and it plans to add 5,000 megawatts of electric power by the end of 1997. These growth patterns are the norm in South Asia, and are particularly evident in China, where 500 megawatts of electric power are added every two weeks, on average. If these needs ayre met with the technology normally used in these nations, greenhouse gas emissions will be significantly higher than they would be if some of the needs are met with demand-side efficiency improvements, renewable energy or higher efficiency generation equipment. This is one message our missions delivered loud and clear.

President Clinton recognizes how much American firms have to offer in clean energy production. He authorized our missions to proceed under his Presidential banner to signify the importance he places, not just on sustainable energy production, but on creating American jobs by helping our firms win their fair share of energy and environmental business available in other countries. Our missions added a new feature to missions of this kind in the past-- that of environmental cooperation on climate change. In each mission, we identified key outcomes that our delegates desired, and each time the attainment of joint projects to reduce greenhouse gases was one of our strategic goals. To ensure that these goals were met, we included delegates from environmental organizations, energy efficiency and renewable energy businesses, as well as traditional energy developers. In the end, both missions achieved government agreements and private business deals that broadened our cooperation with these nations on climate change, particularly in the area of joint implementation. And more importantly, both missions created a spirit of good will with our host nations that will be a strong foundation for future cooperation.

The Presidential Mission on Sustainable Energy and Trade to India in July advanced U.S.-Indo business deals valued at nearly $3 billion. Most of these agreements involved renewable energy and high efficiency natural gas-fired power stations that exceed the efficiency of existing power plants in India. While it is up to the participants in these projects to consider whether they would like to be considered as joint implementation pilot projects, one of them was designed as such a pilot project from the start. It involves Lockheed Environmental Services, Econergy International and Duke Engineering in partnership with four Indian sugar mills. The project will retrofit existing sugar mills to use the bagasse waste as fuel and to cogenerate electricity with the steam currently used in the mill operation. The environmental benefits will be evaluated by the Tata Energy Research Institute of New Delhi and the Environmental Defense Fund of New York.

The Department of Energy also entered an agreement with the Indian Ministry of Environment and Forests to cooperate on deployment of environmentally beneficial technology in India. We also agreed to work with the Indian government to replicate some of our climate action programs in India, where there is tremendous opportunity for efficiency gains and deployment of renewable energy.

Just last month, the Presidential Mission on Energy Investment in Pakistan created an opportunity to advance joint implementation even further. Recognizing the extremely competitive international finance market for power projects, Pakistan has recently taken center stage with a set of incentives that makes it one of the most attractive foreign investment targets for U.S. power developers. This enabled our mission to advance U.S.-Pakistan business deals valued at $4 billion. These included several renewable energy projects, one including power generation from rice hulls, and others on small hydropower development and solar energy. And a leading U.S. manufacturer of steam traps entered a $1 million agreement to deploy these energy-saving devices in a textile mill.

On the government side, the Department of Energy entered into an agreement with the Environment and Urban Affairs Commission of Pakistan to create a cooperative effort to identify potential joint implementation pilot projects, to match them with potential private sector partners and to monitor the results. Joint implementation pilots could play an important role in ensuring that climate mitigation gets consideration as Pakistan's energy market reforms take hold. We also convened a special roundtable to discuss environmental cooperation, particularly climate change, with key environmental leaders from government and private groups.

Technology Cooperation with Austria

In addition to our recent activities in Pakistan, that trip included an earlier stop in Austria, where Minister of the Environment, Youth and Family Affairs, Maria Rauch-Kallet, and I signed, on behalf of our organizations, a memorandum to carry out consultations on environmental and energy-related issues, with early emphasis on climate change and international greenhouse gases emissions mitigation opportunities. This agreement, I believe, will be very useful to our joint international activities to better understand and deal with climate change threats and concerns.

Both countries recognize the importance of early assistance to the non-OECD countries listed in the Convention's Annex I (the Eastern European and former Soviet Union countries) for their meeting of their emission reduction commitments. Therefore, Austria has proposed, and we have agreed to, the joint conduct of a conference in Austria this December involving public and private sector representatives of these countries as well as from Austria and our country. The conference will discuss how to better assist these countries in meeting their obligations under the Climate Change Convention. It will include discussion of assistance opportunities available to them such as the U.S. Initiative on Joint Implementation and the U.S. Environmental Technologies Initiative. I believe that this conference will continue a fruitful dialogue between Austria and the United States as we work for greater understanding of each other's views on climate change and other related environmental topics.

Technology Cooperation with Russia

Russia is another country with which we are working on projects that will help control greenhouse gas emissions. In September 1993, I signed a Memorandum of Cooperation with Yuriy Shafranik, Minister of Fuels and Energy of the Russian Federation, for cooperation on energy efficiency and renewable energy. Under that Memorandum, we have made U.S. expertise available for the review of draft legislation, for discussion of efficiency standards for major energy-consuming equipment, and for training of Russian staff on financial mechanisms that can be used to support commercial projects in the area of energy efficiency. I expect that by the next session of the Gore-Chernomyrdin Commission we will be able to announce financing for one or more new commercial projects, so that we start to see a flurry of privately-developed projects in an area where the efficiency resource is enormous, although hard to tap.

Technology Cooperation with Eastern European Countries

In addition, the Department of Energy has also been actively involved with many Eastern European countries in initiatives to reduce greenhouse gas emissions. For example, up to $20 million has been provided to the city of Krakow for a Clean Fossil Fuels Energy Efficiency Project, which is designed to significantly decrease the emissions of small boilers and home furnaces. CO2 emission reductions of about 15 percent are expected to be achieved through the use of clean coal technology and efficiency improvements in the district heating system.

This week, also in Poland, the Department's Office of Fossil Energy, in conjunction with the Environmental Protection Agency, is co-sponsoring a conference titled, "The International Conference on Coalbed Methane Utilization." The purpose of this conference is to actively promote technology cooperation and partnerships among various private and public sector partners in the utilization of this valuable energy resource. Growing interest in this resource as an abundant, economical, energy source as well as the need to reduce greenhouse gas emissions, including methane, has prompted worldwide interest in this subject. This conference is expected to significantly advance international partnerships in the development of coalbed methane, particularly in Eastern Europe.

At this point, I would also like to report that all is going well with the Decin project in the Czech Republic. I witnessed the initial agreement between the Center for Clean Air Policy, several utility partners, and Mayor Milan Kunc of Decin, this past April. This project, which involves the switching of a plant from coal to natural gas, is a joint implementation pilot candidate. This project will benefit both the regional and global environment. Greenhouse gas emissions, primarily carbon dioxide, will be reduced by over 65 percent. At the same time, sulfur dioxide emissions and coal ash will be virtually eliminated, and air toxics and particulates will be greatly reduced.

Joint Implementation in the Americas

Last Friday, I had the pleasure of attending the signing of a statement of intent by Vice President Gore for the United States and President Figueres for Costa Rica in the area of joint implementation. I am greatly encouraged by the innovation and creativity with which the new government of Costa Rica is embracing both the goal of sustainable development and the goal of reducing greenhouse gas emissions. I believe it will act as an example to other developing nations, especially our other neighbors in the Caribbean and in Central and South America. I believe the message of this agreement is beginning to be recognized -- that sustainable development and greenhouse gas emission reductions need not be accomplished by nations singularly but rather should be accomplished collectively and that these are laudable goals. It is in all our interests to make the world sustainable and to do so in cost-effective ways. This agreement represents the first small concrete step along this path.

U.S. Country Studies Program

The Administration has created two programs to facilitate international reductions in greenhouse gas emissions: the U.S. Country Studies Program and the pilot U.S. Initiative on Joint Implementation.

The U.S. Country Studies program, initiated in 1993, provides a strong base for bolstering cooperative activities with developing countries and countries with economies in transition. Key objectives of the program include providing technical assistance to improve host countries' analytical capabilities, and building working relationships with the many domestic and external departments of the 56 host countries assisted by this program. This program is jointly administered by the Department of Energy, the Environmental Protection Agency, and the U.S. Agency for International Development.

The Country Studies Program has proven to be an effective way for the United States to assist developing countries and countries with economies in transition to develop stronger capabilities to assess their own contributions to greenhouse gas emissions, their potential mitigation opportunities, and their potential vulnerability to impacts induced by changes in regional climates. At the August negotiating session on climate change in Geneva, several of the countries receiving assistance from this program made public statements about how highly they value our help.

I am pleased to report that this program has become recognized as a model for how international partnerships should be formed. For example, when the program was initiated, some developing countries cited their concern that this program might interfere in their own policy making on climate change issues. The program's reputation now is so strong that twenty countries receiving support requested that part of the U.S. assistance should be allocated to helping them develop the information and policies they need for their first report to the Climate Change Convention.

The U.S. Initiative on Joint Implementation

In the Climate Change Action Plan, the Administration proposed an experimental pilot program on Joint Implementation. This pilot project would provide experience and information to help design an international joint implementation program. The development of a mature Joint Implementation regime as part of the Convention is viewed by many of the countries that have undertaken emission limitation responsibilities to be an extremely important element in determining appropriate next steps for action under the Convention. Later today, in your next panel, the representative from the State Department will address international aspects of Joint Implementation in greater detail.

In anticipation of the establishment of an international joint implementation pilot program, the Administration included in the Climate Change Action Plan a set of draft Groundrules for the United States Initiative on Joint Implementation (USIJI). These draft Groundrules were opened for public comment by the Department of State last December. This resulted in the publication of final Groundrules for the Initiative on June first of this year. These Groundrules set the criteria under which a proposed project will be considered for inclusion in the Initiative's portfolio.

These Groundrules also set up an Evaluation Panel composed of senior policy officials of eight departments and agencies. The Panel Co-chairs are Assistant Secretary Susan Tierney of the Department of Energy and Assistant Administrator David Gardiner of the Environmental Protection Agency. In addition to the Panel, the Co-chairs have set up a Secretariat to carry out the day-to-day functions under the Panel's direction. At its first meeting in June, the Panel provided initial guidance on what should be included in project proposals.

The draft guidelines for a proposal application were the subject of a Public Workshop this past September 21, attended by nearly 200 participants. The participants provided a rich cross-section of interested parties to Joint Implementation -- including business interests, utility representatives, representatives of environmental groups, and representatives of other countries. The discussions resulted in some useful modifications to the guidelines. With these changes, the Panel has proposed that the interested organizations submit their proposals of projects for inclusion in USIJI during the period of early October to November 4, 1994. A schedule is attached. (Attachment 3)

These first proposals, as stated in the USIJI Groundrules, will be evaluated within ninety days. The first portfolio will be announced no later than early February. This schedule will allow the United States delegation to the eleventh meeting of the Intergovernmental Negotiating Committee to report our first lessons learned to the Committee as the Committee designs the international pilot program.

As you can see, the Administration is committed to playing an active role in the establishment of an international joint implementation regime. I believe joint implementation is critical to the success of the Convention and the achievement of its objective, namely, the stabilization of greenhouse gas concentrations at levels below those which cause a dangerous interference with the climate system.

Intergovernmental Panel on Climate Change Assessment Report

Mr. Chairman, in your invitation letter you specifically asked me to discuss the significance of the recently issued report of the Intergovernmental Panel on Climate Change (IPCC). This report is a Special 1994 Assessment Report, which is a preliminary draft of a report that will be published in 1995. The 1994 Report deals with special questions that the climate change negotiators requested, including: the relative warming effect of the various greenhouse gases; the persistence of the gases in atmosphere; the best estimates of levels and timing of emissions reductions required to assure that the gas concentrations do not exceed stated levels; and the appropriate range of global emission projections, given that there have been no new policy actions taken to reduce global emissions beyond those known in 1992. The 1994 report constituted a first peer review. The more complete 1995 Assessment Report is scheduled to be completed, peer reviewed, and reviewed by governments by September 1995.

In full disclosure, I should mention that several of the scientists that contributed to this report work at our national laboratories or are supported by Energy Department funding. I know that later today you will hear from Bob Watson, one of the esteemed scientists from the White House Office of Science and Technology Policy who was intimately involved with this Panel. Since he is a scientist, I will leave the details to him. But here are my views as from where I sit as a cabinet officer with a lot at stake on this issue. For a policy maker, the most significant message in this report is that the fundamentals of this issue remain unchanged since the 1990 assessment. The loading of greenhouse gases into the atmosphere remains a threat to the climate system. But it also shows that we are still learning. Methane's global warming potential turns out to be greater, and recent emissions of methane appear to be decreasing globally. The effects of the eruption of the Mount Pinatubo volcano appear to be confirmed-- it had a cooling effect that might mask the warming that might have occurred otherwise.

The Need to Cooperate Along the Road to Sustainable Development

Finally, Mr. Chairman, where do we go from here? As we examine the next steps needed to reach the ultimate objective of the Framework Convention, it is clear to me and this Administration that we need to set out an international process that builds on the principles already contained in the Convention. While the State Department representative this afternoon will expand upon this, I just want to point out that the work that the Department of Energy is doing in preparing the next National Energy Policy Plan, in its participation in the Policy Dialogue Advisory Committee on Personal Motor Vehicles, and through my active participation in the President's Council on Sustainable Development, will all contribute to the Administration's post-2000 strategy.

I am personally committed to helping bring about a sustainable world with far less greenhouse gas emissions than we see now. In fact, I have scheduled trips to China and the Republic of South Africa to further these interests in the coming year. There is a powerful lesson that we in this Administration continue to learn: whether in the deliberations of the President's Council on Sustainable Development, or the negotiation with Climate Challenge utilities, or the discussions with Ministers in India, Pakistan, Austria or Costa Rica -- the only way we will ever achieve the goals of the Framework Convention on Climate Change will be through cooperative efforts and partnerships. In my many trips within the United States, I have begun to understand the desire of many of our citizens to work internationally on reducing the threat from global emissions. I have experienced many of the same sentiments in my travels abroad. We are facing an incredible opportunity to meet the sustainable development demands of our global partners with our domestic supply of investment capital, technology and good old American know-how. And we at the Department of Energy plan to do all within our capabilities to turn these opportunities into realities.

Thank you. This completes my testimony, and I would be pleased to answer any questions.

ATTACHMENT 1

Summary of DOE Climate Change Action Plan Actions

CCAP Action	FY95 Budget ($million)		Progress
	Request	Approp.	
#1 Rebuild America: Commercial building retrofits through utility/community partnerships	20.0	8.5	Pre-proposals 10/94 20+ city partnerships expected
#3 State Efficiency Revolving Funds: Revolving loans to improve efficiency of state/local buildings	11.0	0	Funding Deferred
#4/6 Market Transformation Partnerships: Manufacturer/ utility partnerships to develop and buy super efficient equipment	25.0	9.0	Consortia under development for several equipment categories
#5 Energy Efficiency and Renewable Energy Info &Training Program	3.4	0	Funding Deferred
#7 Enhanced Appliance Standards: Aggressive implementation of standards	n/a[1]	n/a[1]	Final 8 product rule out; streamlined regulatory process in place
#8/11 Residential Energy Services: Home energy rating systems, energy efficient mortgages and builder assistance/recognition	8.3	3.8	Six HERS pilot states; active partnership with financial and real estate industries
#9 Cool Communities: Consortia to develop/label cool materials; community partnerships to implement community plans	2.2	0	Consortia under development; 8 community partners
#10 Building Standards: Technical assistance and grants to accelerate state building codes upgrades	14.0	6.5	Technical assistance service established; national workshops and information outreach
#12/13: Motor Challenge and Industrial Market Transformation: increase efficient motor penetration through industry pledges, technical assistance and showcase demonstrations	5.5	4.5	Technical assistance service established; national workshops and information outreach; request for showcase proposals 10/94
#14 Accelerate Efficient Industrial Process Technologies: Information outreach and grants	8.5	0	Funding Deferred
#15 Expand Energy Analysis and Diagnostic Centers: Expand centers and increase audits and	3.5	0	Expansion of EADC mission begun at selected universities
#16 Accelerate Source Reduction, Pollution Prevention and Recycling: Expand NICE^3 industrial process efficiency grant program	5.5	3.0	25 awards through 40 states for innovative pollution prevention; 5:1 leveraging of funds
#25 Fossil Energy Fuel Cell Development	18.0	0	Funding deferred
#26 Renewable Market Mobilization: Collaborative partnerships and grants to accelerate renewable energy	65.0	65.0	Public/private collaboratives formed; over 100 pre-proposals
#27 Promote Integrated Resource Planning: Expand technical assistance and outreach to state regulatory bodies	6.0	3.0	National design workshops with >100 participants; DOE intervention in key state proceedings
#28 Improve Hydroelectric Generation:			
#35/36: Coalbed Methane Recovery RD&D:	3.0	1.2	Public/private partnerships under discussion
#37 Expand Landfill Recovery RD&D:	n/a[1]	n/a[1]	Research on methane capture technology expanded
Joint Implementation: International technology partnerships to reduce emissions	2.1	2.1	Evaluation Panel established; project proposals workshop held
Climate Challenge: Utility reduction agreements and programs	3.0	2.0	Over 800 utility partners; plans announced in 1/95
Climate Wise: Industry and city reduction pledges and programs	3.0	2.0	Industry pledges totaling 10 MMTCE

[1] Incremental FY 1995 funding not required; action funded in base programs at approximately $1.5 million.

* Assumes entire solar international reduction is taken from joint implementation.

ATTACHMENT 2

Schedule for
Voluntary Reporting of Greenhouse Gas Emissions and Emission Reductions
(Energy Policy Act of 1992, Section 1605(b))

Action	Date
Notice of Inquiry to solicit initial public comments	July - September 1993
Public Workshops for the development of the Public Review Draft Guidelines and Technical Support Documents	November - December 1993
Draft Guidelines and Support Documents opened for public comment	June 1, 1994
Public Hearing on Draft Guidelines and Support Documents	June 29, 1994
Close Public Comment Period for Draft Guidelines and Support Documents	August 2, 1994
Announce availability of Final Guidelines and Technical Support Documents	October 19, 1994
EIA opens Draft Data Forms for public comment	November 1994
EIA to release Data Forms for voluntary reporting of emissions and emissions reductions	April 1995

ATTACHMENT 3

Schedule for
United States Initiative on Joint Implementation (USIJI)

Action	Date
USIJI announced as part of US Climate Change Action Plan	October 20, 1993
Draft Groundrules opened for public comment	December 17, 1993
Public Comment period ends	February 17, 1994
Final USIJI Groundrules published in Federal Register	June 1, 1992
USIJI Evaluation Panel holds first meeting	June 10, 1994
USIJI First Proposals Workshop held	September 21, 1994
Submission period for first proposals opened	October 4, 1994
Submission period will close	November 4, 1994
Evaluations of first proposals to be completed	February 3, 1995

Mr. SHARP. Well, thank you very much, Madam Secretary.

Let me applaud your efforts on these missions. They have certainly received high praise from people in business and industry who are eager to find new markets from folks who want to encourage energy efficiency and alternative energy production and appropriate technologies. And they have received praise from the diplomatic community because you have been successful in demonstrating goodwill and making friends for the country in ways that seem to have been difficult, for some odd reason, in the past. They had the wrong personality, probably coming from the U.S. Government, but you have been very successful, and I certainly applaud that.

Let me—I don't know that I have a lot of questions for you. I more want to engage in a discussion which we have had on many occasions about the importance of this issue, and my own sense about it. So I am just going to seize the opportunity to make a little statement, that I do think it is wise and prudent for us in the United States and around the world to take very seriously the issue of global warming. And at the same time, we know that we are reluctant and everyone is reluctant to engage in any high-cost options in the event we might be wrong or just because, frankly, as a pragmatic, we have so many demands for expenditures for resources here and abroad that it is difficult to keep and sustain support to do that.

What we do know and what you have I think very successfully pursued, is that lots of things can be done that have value to serve multiple goals here in our country and abroad which also serve the goal of reducing greenhouse gasses, and you alluded to a number of them here. Most people are looking at these appropriate technologies, not because they solve the greenhouse gas problem, but because they provide energy cheaply and in a way that they can use them, and so they have energy efficiency, they have economic efficiency goals, they serve other environmental goals. And I think we are wise to keep focused on that, because I don't think at this point we can command great and widespread support in our country, and I am not sure anywhere, to sustain a heavy global warming policy at this point.

I think that is just the political realities, and it might well actually be the prudent intellectual thing, too, because we are still advancing the science. So it strikes me that we do want to advance the science with this administration, and indeed the past administration were committed to doing, and we are doing that in the international arena.

We want to continue, as you have given us a solid example of the analysis and the program initiatives to try to meet the goals that we have agreed to. We certainly want to pursue the least costly approaches, given the state of the economy and the fragile political support for action, and I think we want to clearly continue the framework of Rio. But I am about to say something that some of my colleagues who support Rio may not like, and that is that I think the framework ,provides a very important way in which the international community works together, defines the problem, seeks to get people committed to doing the goals, but as you alluded many times, expressing a concern that I know is in you, that you can do tons of things on paper that in the real world never happen or don't happen sufficiently to match what you have committed to on paper.

And I think there is a high risk if we push too hard on advancing commitments that no one else nor ourselves will make, that we will undermine this process that we have underway. And I know this is an intense argument within the administration, outside the administration, as how hard and how fast to go.

And I don't know what the magic balance is. But it does strike me that we want to follow through on what we are committed to, as best we possibly can, but other countries, while they are meeting their report deadlines, I hear, anyway, politically are having difficulty making the tough tax choices and the tough other kinds of choices that we have had trouble making.

Secretary O'LEARY. There is a memory there.

Mr. SHARP. Yes. To actually get big payoffs. Under that kind of situation, I think it behooves us to remember what happened to us in the Vietnam War when we measured success in that war, the United States did, by something called the body count, a very crude and crass wartime analysis, in which we counted how many VC, Vietcong had been killed. And remarkably enough, we won the war several times over.

Now, we won it on paper at the Pentagon and in press speeches for a number of years. But as everybody knows, that isn't the reality of what happened, because all kinds of things, the incentives were for people to indicate how many had been shot and to get rewarded immediately for having high numbers, which were not anywhere near the reality, and there is a danger.

This is a gargantuan effort internationally in which governments are under intense pressure to do all kinds of things, so their capacity to make those commitments and sustain those commitments are going to be limited in the very near future. That doesn't mean it is a very important and worthwhile thing to do, but it just means if we put all of our eggs in that basket, I think 10 years from now we will ask how much we have accomplished. That is why I like your approach of just pragmatically pushing ahead with what you can make work, and trying to tabulate that as best you can.

It is why I think joint implementation is horrendously important, not because I think it is going to be the absolute solution to global warming, but because I think it will do more to accelerate the movement of technology, it has economic benefit to us, to the local economy abroad that it is going into, and giving domestic industry some credit, sometimes just on paper, but credit is just one more stimulus to make that happen, and we win on that score. And if we try to be too perfectionist and say, oh, but, you know, that system leaks and somebody is going to get credit that shouldn't get credit under global warming, we are missing the boat.

And I am concerned that some in the environmental community and some abroad are going to miss the boat, because the real-world action that needs to happen is to get that technology out there in the marketplace and expand it and move it forward. And we should be supporting everything that helps to do that.

And you, of course, have been a strong advocate. I know I am preaching a little bit to the choir, I don't want to preach, and so I think that is just absolutely vital.

The one last thing which I know folks have done some work on is we are pursuing multiple things in our government, that is really vital. But I think it would behoove us and it would behoove the international community to see if we could not come to agreement on half a dozen or fewer high-priority goals within global warming, on top of or independently from or separate from the national goals that everybody is setting under this. And by that I mean, let's focus on coal burning in China and make it efficient.

I don't know what the five or six ought to be, I am just putting out ones I hear. Let's focus on rain forests and reforestation, let's focus on, as you already indicated, loss of methane, and the gas-distributing systems tends to be in the former Communist nations where it is worse, but even in our own, we have little communities in this country where that is the case. Those are enormous losses, and there is strong economic reason in most places to preserve that gas and not let it escape into the air.

The reason I suggest that if we could get more consensus on a half dozen or fewer priorities, then it would be more possible for us and others to harangue the World Bank to say, here is what ought to be a priority, to get the AID program in the United States, to get the German aid program, to get the Japanese aid program, to get others to stay focused. Because I think one of the biggest problems we will have in global warming is you, me, everybody else have got a thousand things going at once, and global warming it is hard to stay focused on it, especially with the absence of strong political support here or around the world for action. And so it strikes me that we need to be moving in a parallel basis.

These are not exclusive, but building the national goal system under Rio, as best we can, but prudently understanding that most governments are, frankly, not going to make it to the full level that they say. It is always good for all of us to set goals and try, but we are not going to let that just be the be all and end all.

These other kinds of goals are ones that are very important, for a variety of reasons, to serve. But if we could get some consensus on what they are, then we might get more international resources, private resources and whatnot, going into them, so that we really have major payoffs in the future.

Well, with that little exercise in using my 5 minutes to ask questions, if the Secretary wishes to respond, I will let her, then I will turn it over to my colleague.

We invited you to answer the questions, Madam Secretary.

Mr. BILIRAKIS. Phil, your professorship comes out in you every once in a while.

Mr. SHARP. I know, I can't resist.

Mr. BILIRAKIS. Good morning, Madam Secretary.

Mr. Chairman, I have an opening statement, and also one for Mr. Hastert who asked unanimous consent they be made part of the record.

Mr. SHARP. They certainly will be.

[The opening statements of Hon. Mike Bilirakis and Hon. J. Dennis Hastert follow:]

OPENING STATEMENT OF HON. MIKE BILIRAKIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Thank you, Mr. Chairman. I welcome this hearing today on climate change. The topic of climate change was the subject of one of the first hearings the Energy and Power Subcommittee held in this Congress. Now a year and a half later it is the subject of our last hearing and still one of the most challenging issues we face.

I am concerned about this issue on a number of fronts. First, I am concerned about how our domestic climate change action plan is shaping up. I hope that the administration and industry are working together to meet the greenhouse gas emission reduction goals set forth in the plan. I am fearful that if this voluntary program is not successful, there will be a lot of pressure to enact command and control type regulations to reduce such emissions. Industry and utilities will then lose the flexibility to tailor carbon emission reduction programs to their own needs as they can now under the voluntary program.

I am also very concerned about the status of the international negotiations on this topic. At a hearing on this topic last August I expressed concern that the administration was not coordinating enough with Congress and industry before making commitments in the international arena. Since then the administration has done a better job of notifying us before international meetings. However, I still have questions about the positions the U.S. is adopting in some of the debates, particularly the adequacy of commitments and joint implementation debates.

Under the Rio Treaty, as I understand it, developed countries are committed to the *aim* of reducing greenhouse gas emissions to 1990 levels by the year 2000. Developing countries, which in the past have had lower emissions do not have to achieve any emission reductions. However, in the past year, it has become apparent that emissions from developing countries are becoming greater than emissions from developed countries. Yet, my understanding of the debate is that these countries would like to see us make commitments to achieve even further reductions while they would continue to have no obligations.

In addition, many of the developing countries would like to deny developed countries any credit under the treaty for joint implementation activities. Global climate change is truly a global issue and emissions reductions, no matter where taken, will reduce concentrations of greenhouse gases in the atmosphere. Joint implementation is one of the most cost effective methods for U.S. industry to achieve significant greenhouse gas emissions reductions and I hope the U.S. is pushing hard to see that we receive full credit under the treaty for joint implementation activities.

Mr. Chairman, I thank you for your leadership on this subcommittee and on this issue. I am looking forward to the testimony of the witnesses on these issues—and any others that they feel are affecting the climate change issue.

Thank you.

OPENING STATEMENT OF HON. J. DENNIS HASTERT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Thank you, Mr. Chairman for holding this hearing today on recent developments in our efforts, both internationally and domestically, to reduce emissions of greenhouse gasses. Global climate change and energy policy are inseparable issues, and I am pleased that this Subcommittee is again addressing this issue.

I am particularly interested in examining efforts to pursue "joint implementation" projects in developing countries as a reasonable and effective way of reducing greenhouse gases. Indeed, joint implementation initiatives make sound economic as well as environmental sense.

I am proud to say that the state of Illinois is in the forefront in promoting these joint implementation projects. For example, the Illinois Department of Energy and Natural Resources is working with Illinois Power on a project in China involving a natural gas pipeline that was built in the 1930's and is experiencing leakage of about 25%. While the project is only in its preliminary feasibility stages, its potential impact on reducing emissions when completed is significant. The U.S. Department of Energy is also providing some grant money for the current preliminary feasibility work on this project.

Commonwealth Edison, the electric utility that serves northern Illinois, has also entered into a joint implementation program. Specifically, Commonwealth Edison is making improvements to a plant in Decin, the Czech Republic. This joint implementation program will reduce CO_2 emissions in a much more cost effective way than is achievable in this country, where most industrial facilities are already comparatively efficient.

The United States should encourage these collaborative efforts. As I previously stated, these joint implementation programs make good economic sense not only for U.S. companies and U.S. technologies, but also for the global environment. As Chairman Sharp would say, joint implementation projects are win/win initiatives.

I encourage the Department of Energy to promote joint implementation programs in the international arena. While I understand that currently there is no international agreement on the issue of credits as they relate to joint implementation projects, I hope that both the Department of Energy and the State Department understand the benefit of providing these credits to participating American businesses and will work to have them accepted internationally.

Mr. Chairman, I would be remiss if I concluded without saying how much I have enjoyed working with you on this subcommittee. The foresight and leadership that you have brought to this subcommittee and to the complex issues that we have addressed is commendable and appreciated by all of us who have served with you on Energy and Power. You will indeed be a hard act to follow. I wish you the best in your future endeavors.

Mr. BILIRAKIS. I apologize to you and to our Secretary for my tardiness, but I had a 9:15 appointment that I had made earlier, I just couldn't get out of it.

Well, Madam Secretary, I know that the chairman has basically said most of it, I suppose, and I know that you addressed a lot of the areas that concern all of us.

Bottom line to me, to all of us, I guess, is we are concerned about global warming, we are concerned about the emissions, but we don't have walls separating countries. We don't have walls that keep the emissions from, "developing countries" from coming over and affecting the rest of the world.

And I know that under the Rio Treaty, developed countries are committed to reductions and developing countries which in the past have had lower emissions, don't have to achieve any emission reductions. And I suppose there were good reasons for this stipulation at the time that discussions took place.

However, in the past year, it has become apparent that emissions from "developing countries" are becoming greater than emissions from developed countries. And, at the same time, developing countries would like to see us make further commitments to achieve even further reductions while they would continue to have no obligations.

So I would ask you a question. Are we so tied into the agreement, to the treaty, that in spite of the fact that changes are fast taking place among some of these developing countries, that they will continue to be completely free of making any reduction in their emissions?

Secretary O'LEARY. Well, I have talked a bit about our joint implementation pilot program, and used as an example India, and also used as an example China, and used the project in your own State, a joint effort by Illinois Power with the Illinois Energy and Natural Resources Department working in China on an initiative to stem losses from the gas pipeline which are energy losing, therefore emitting. I talked about the losses, and I also talked about the fact that the cost—I have a Florida project, I am sorry, I can do a good job on you.

Mr. BILIRAKIS. I just thought I would throw that in, a light moment.

Secretary O'LEARY. I have a Florida project, I will go to India, I will go to solar lamps. We are working in India and China with U.S. companies and with these countries who recognize that they have a problem. More of the recognition of the problem stems from the fact that they have got an economic problem as they begin to develop energy resources.

You are quite right to wonder when the burden of meeting the goals will be placed on these countries. But I think what we are wondering, these joint implementation projects, and here the example of the solar technology with firms now from Florida involved, in training workers in India, who can both build and repair these solar lanterns, doing two things:

One, reduce emissions and saving costs. Because every village in India or China doesn't need to be central-station connected. It is not cost-effective. The fuel that is being used now often is wood, which also results in emitting global greenhouse gases.

So as we begin to work with these nations who are requiring and wanting assistance—the other thing I said before you arrived, we did a trade mission first to India with 40 people. The focus was on sustainable development and really helping that nation understand that they have to cap emissions while gross domestic product grows.

As we went to Pakistan, a much smaller country, we had 80 business and nongovernmental delegates in Pakistan, and deals written in furtherance of sustainable energy for that country amounted to $8 billion worth of equity from U.S. firms. That tells me that the initiative has begun to work.

And I also believe at this time what we need to do is support the countries as they begin to really balance not only their environmental requirements but the economic and revenue requirements of the country. And if you can sell sustainable development, it helps the budget of that country and accomplishes our goals at a time when the countries, many of them, are newly coming to grips with these issues. And I believe once again the collaborative in this regard makes a lot more sense than early on forcing a set of goals, that the countries are not yet ready to receive.

And two, the final point to be made is while all this is going on, this is great for economic expansion in the United States.

Mr. BILIRAKIS. Well, yes, and you expressed it well, and I commend you for it. So you have mentioned two or three countries who apparently have been responsive and receptive to these new ideas; is that right?

Secretary O'LEARY. That is absolutely correct.

Mr. BILIRAKIS. Are we running into many that have not been receptive?

Secretary O'LEARY. I had the privilege of spending time in a substantive meeting with the president of South Africa, the South African Republic yesterday morning. I am headed to South Africa as soon as I can get there.

Mr. BILIRAKIS. That is a long flight.

Secretary O'LEARY. And I have been on some long ones lately, but for the same reasons. There is the desire and there is the keen awareness, as I discussed with the chairman and Mr. Moorhead before your arrival, that on a pragmatic basis, price being a reason, health being a reason, without even discussing global climate change, the health concerns in these countries are such that they want the great technology. And with respect to South Africa and the need for clean coal technology, remember we learned from the South Africans about coal liquefying, but the goal there is over the next 5 to 10 years to electrify townships, which is going to help tremendously in capping the energy consumed per capita in a country like South Africa. That makes good sense for the economics.

Mr. BILIRAKIS. Well, let me ask you, and I know I am fast approaching my 5 minutes, if I haven't passed it, just to be a little parochial, are these Florida companies, the Illinois companies.

Secretary O'LEARY. Or Florida or California.

Mr. BILIRAKIS. Would they be getting any kind of credit for taking the time and the expense to go over to these other, hopefully, receptive countries?

Secretary O'LEARY. Here is where we are on the question of joint implementation. You might recall last year, we began with this Secretary of Energy, a very strong proponent of implementation.

We are now in the process of establishing pilot programs. These companies that I have talked about have already begun their work, clear on the commitment that pilot programs will be reviewed and let into the system. We will book emissions reduced and then it is up to the two contracting entities to decide how to share those emissions saved or avoided.

The pilot program sets some criteria for letting these programs into the system. But the good news is that we will be banking on the side of, if you will, emissions avoided, which can be applied when this Congress, who will have a lot to say about it, gives us some direction, which we are anxious to receive, and which we will subsequently negotiate internationally. But already we have got activities ongoing, and we will by the end of next month, the end of November, have begun the processing and the selection of the pilot programs.

Mr. BILIRAKIS. By the end of this coming November, next month?

Secretary O'LEARY. That is right. We have a system ready to bank these, with a 1605 booking requirement that was established under the Energy Policy Act. So we are ready to go, and clear on the fact that negotiating parties, companies—and the United States of America, company in "X" country, India, Pakistan, Brazil, Argentina, China will negotiate fairly between themselves how each shall credit the emissions saved.

Mr. BILIRAKIS. I can't speak for our outgoing chairman, but on behalf of myself, I would like to thank the rest of the committee that will be back next year. I would hope that you will keep us advised and ask us to work with you. This is awfully important, and I think it is important in terms of the reductions. But it is also important to make sure that we don't hurt our own people in the process, and have them bear the brunt of somebody else not carrying their share of the load.

Secretary O'LEARY. I understand that issue. And I believe that the reason we have so many companies now signed into formal agreements with us under the various climate change program plans, and the reason we have so many people coming on these sustainable development missions, is because they see clearly that we have no intention of leaving U.S. companies behind, either on the opportunity to earn and expand markets or the opportunity to credit emissions avoided.

I began this very flexible, voluntary, collaborative program, clear that I was champion of many but certainly champion of our own companies and of the United States needs and requirements.

Mr. BILIRAKIS. Thank you so much.

Thank you, Mr. Chairman.

Mr. SHARP. Mr. Hastert.

Mr. HASTERT. I know Mike and I look alike.

Secretary O'LEARY. No, you don't.

Mr. HASTERT. Mr. Chairman, I am remiss, coming in a little bit late here.

I just do have an opening statement, and in that statement, I would be remiss if I didn't give my great congratulations to you and your fine service that you have given this committee in this place in Congress. The high road of humility sometimes isn't very heavily trafficked, but could I put that accolade to you.

Mr. SHARP. That is the nicest compliment I have ever gotten.

Mr. HASTERT. And the great service that you have brought to this committee and the various big pieces of legislation that we have moved out of here, really on a balanced plane, and you are responsible for that. So I will let the rest of those accolades be in the record, and they may be impetus to accept the late opening statement.

I appreciate again, Madam Secretary, that you are here today, and, of course, a great interest to States like Florida and Illinois and to the whole country, of how we implement the treaty and implement the ways to better make this a better place to live, not only this place, but also the whole world, which you are understandably undertaking.

Again, one of the questions that we get back to parochial things, and we will talk about Illinois, which the gentleman from Florida was interested in Florida, but the Illinois Department of Energy and Natural Resources, is working with Illinois Power, as you well know, on a joint implementation project in northeast China. The DOE has agreed to give this collaborative effort funding of about a half million dollars for preliminary feasibility work related to the project.

Recently, Illinois received about $170,000 for that first Phase I of the project. What is the status of Phase II? Is this coming along? Do we have the impetus to move these projects along?

Secretary O'LEARY. This is a great opportunity. Before you arrived, I talked in my opening remarks about the potential for projects like these, exciting pieces that with pretty low technology, you can go in and solve a very expensive and environmentally expensive and financially expensive problem. We like this initiative.

My colleague Abe Haspel is going off to China in 2 weeks to further explore this project. We like it, we believe it is bankable and we like the economics. The return is four to one. I mean, this is no cost, this is an earner. This is just the kind of thing we ought to be doing, voluntary again, nobody is being forced to do this.

Mr. HASTERT. One of the things, of course, nobody is being forced to do these things. But there is always the impetus of the credits and to keep companies on-line, and that needs to be followed through as well. And I am sure that you are implementing that.

The treaty, what steps is the administration taking to see that the joint implementation activities receive full credit under the Rio Treaty? I mean, I understand that we have had 80 signatories to the treaty, we need to get those countries to agree. Where are we in that program?

Secretary O'LEARY. Well, we are at the stage now where the pilot programs, of which the Illinois project certainly will likely be one, are now being reviewed here in the Clinton Administration, so that we have a basis upon which to move toward agreement about how we implement the joint program internationally. The requirement that we sought, and I believe was correct, was to begin to pilot these programs. By January, the Department of Energy working with our friends at the Environmental Protection Agency and other agencies, we will have selected a number of programs which will permit us now to prove out the concept. And as I was discussing when you arrived, also to prove out the fact that contracting parties from the United States and developing countries will themselves decide and negotiate as a part of the contracting itself how to split the credits achieved from joint implementation.

It will be the result of these pilot programs which I believe will take us forward together with successful results in the developing or non-OECD countries, which will take us where we need to go on the negotiation. And so we are trying to take solid results and experience into the debate, and that is the next step, in my view.

Mr. HASTERT. So as I understand your explanation, you are actually accepting applications for joint implementation pilot project?

Secretary O'LEARY. Right at this very moment.

Mr. HASTERT. How do you sort those out? How do you look at those and put a credit to them?

Secretary O'LEARY. There is a rich set of criteria which looks for a diverse, active energy supply and demand projects, also asks the question, are these savings which would not have been realized but for the program, and sets up a requirement for a clear ability to track savings and a number of other criteria, which are outlined in my formal testimony. I believe that these are appropriate criteria and I am clear on the fact that we are ready to implement them.

Mr. HASTERT. Why don't developing countries want to give credit for internationally for joint implementation? What is the problem there?

Secretary O'LEARY. Well, I have learned in one short 20-month period that it would be very difficult for me to characterize all of the non-OECD countries in that light. I think, quite frankly, as the chairman had alluded to before you arrived, some of this may be evolving from past history with some of the more developed countries. The more often we have the opportunity through these pilot programs to ensure both countries and our joint venture partners from the business side, that no advantage is meant nor will be taken, the more I am certain that this concept will be acceptable.

In the countries that we visited this summer, I have engaged ministers on this issue. I think the proof of the United States intention will be delivered on these pilot projects, and I believe that we will have agreement that joint implementation works for everyone.

Mr. HASTERT. Thank you.

Thank you very much.

Secretary O'LEARY. But I do believe we have to prove ourselves as well.

Mr. HASTERT. Prove them in what sense, that we can actually deliver?

Secretary O'LEARY. That we can actually deliver, that we are delivering. You know, the United States, like it or not, has for years, rightly or wrongly, earned the reputation that we come to do good for ourselves as opposed to do good for ourselves and others. And I think in this regard, we will through these pilot programs begin to prove that all will benefit. This is the way we have approached our missions and our discussions. We are looking for the benefit in the United States and we are looking for the benefit for our partners.

Mr. HASTERT. I think the commentary on that, we have been involved in altruistic situations to some degree or other, Peace Corps and other things like that, but when you get American business involved, there has to be something that is the carrot or the stick or the incentive to do that, and we want to make sure that that is balanced, and I think we need to be forthright on that message as well.

Secretary O'LEARY. Trust me, there is no one in this regard more balanced than I, but I also understand the history.

Mr. HASTERT. Thank you very much, Mr. Chairman.

Mr. SHARP. Thank you very much.

That is very clear, there still remain voices in the Third World that fear neocolonialism, that found that, not necessarily directed the United States, but European colonial powers, very reluctant about foreign investment and about policies that engage with them. However, that is rapidly changing as more and more of the governments and local economies have discovered the value of foreign investment and the engagement as long as it is not a dominant political force as well, which it used to be in many, many cases. So there are probably some places that won't get over that. But I think a lot of the countries are opening up in a way that is in their self-interest, and they have learned how to regulate it so that they can't have political domination by the foreign power.

And so I think we have to not be almost unapologetic about that, we recognize the history, recognize the exploitation that has gone on historically, but that the truth is that if you want economic and environmental change, there has to be a working together, there has to be investment and moving, there has to be government coordination. And those are things that I think joint implementation will do, and so I think we ought to pursue it very strongly.

Secretary O'LEARY. Mr. Chairman, I believe a follow-up is required, and that is to simply mention that the United States Government and its businesses are not the only country or companies out seeking opportunities in non-OECD countries. That also requires a great sense of balance and sensitivity as one pushes the business interest, while, at the same time, trying to compete with people who have had, in most instances, a much longer-standing government-driven interest in doing business in some of these countries as well. So it is an interesting challenge.

Mr. SHARP. Well, Madam Secretary, our time has run out.

Mr. HASTERT. Would the chairman just yield for a second for a comment?

I think one of the things you have to keep in mind, that sometimes the remunerator of efforts that have happened have never had much discipline tied to them, and I think this is a new step in international relations as well. I understand you are doing a very good job with that.

Secretary O'LEARY. Well, I have a lot of help, and I am grateful for it.

Mr. HASTERT. Thank you, Mr. Chairman.

Mr. SHARP. We are going to recess now and let the Secretary and all of us go to the Joint Session of Congress, and we will reconvene at 1 p.m. Thank you very much.

[Brief recess.]

Mr. SHARP. The subcommittee will please come to order.

We will continue our session on global warming. We had the Secretary of Energy this morning and took a break for the joint session with President Mandela that just occurred.

Now we are pleased to get back to global warming, and very pleased to have with us Mr. Robert T. Watson, the Associate Director for Environment with the Office of Science and Technology Policy in the Executive Office of the President; Mr. Rafe Pomerance, the Deputy Assistant Secretary for Environment and Development with the Bureau of Oceans and International Environmental and Scientific Affairs for the United States Department of State; and Dr. Karl Hausker, Deputy Assistant Administrator for Policy, Planning and Evaluation with the Environmental Protection Agency.

Gentlemen, I think you are quite familiar with our processes. We will make your written statements a part of our record and be happy to have your oral summary at this point.

Mr. Watson, I think we will just go down the table and begin with you.

Thank you.

STATEMENTS OF ROBERT T. WATSON, ASSOCIATE DIRECTOR FOR ENVIRONMENT, OFFICE OF SCIENCE AND TECHNOLOGY POLICY, EXECUTIVE OFFICE OF THE PRESIDENT; RAFE POMERANCE, DEPUTY ASSISTANT SECRETARY FOR ENVIRONMENT AND DEVELOPMENT, BUREAU OF OCEANS AND INTERNATIONAL ENVIRONMENTAL AND SCIENTIFIC AFFAIRS; AND KARL A. HAUSKER, DEPUTY ASSISTANT ADMINISTRATOR FOR POLICY, PLANNING AND EVALUATION, ENVIRONMENTAL PROTECTION AGENCY

Mr. WATSON. Thank you, Mr. Chairman.

It is a pleasure to be here today to talk about the issue of climate change. What I would like to present today is the latest findings of the Intergovernmental Panel on Climate Change Working Group I.

A large number of scientists, about 150 in total, have recently prepared a document that discusses the "Radiative Forcing of Climate Change," that is to say, how do greenhouse gasses, like carbon dioxide, methane, fluorocarbons and nitrous oxide affect the heat trapping of the earth's system.

This document was not only written by 150 scientists from over 120 countries, in addition, it was peer reviewed by 231 experts from an additional 31 countries, and then it was submitted for governmental review process at 150 countries and nongovernmental organizations were asked to review it. So this is a heavily peer-reviewed document. It represents the best current view of implications of greenhouse gasses on the heat trapping of the earth's system.

However, I should note, this document did not look at the validity of the general circulation models, it did not look at the observations of climate change or the implications to sea-level rise or ecological systems. That work is currently being done by working Groups I and II in a comprehensive assessment that will be published in about a year's time.

What did we learn? We reaffirmed that greenhouse gasses have significantly increased since the industrial revolution due to human activities. Carbon dioxide has increased from about 280 parts per million to 360 parts per million. Reason? Combustion of fossil fuels, deforestation in the tropics.

Methane has also increased. It has almost tripled from 0.7 parts per million to 1.7 parts per million, largely due to different practices such as rice production, cattle production, and leakage from coal mines and natural gas systems.

Nitrous oxide has increased, largely due to the application of fertilizers by changing the nitrification, and denitrification processes in terrestrial systems. And halocarbons which are about to be controlled by the Montreal Protocol, in fact, phased out by the Montreal Protocol, have also had increased substantially since the 1930s and have also led to a change in the radiative heating of the earth's system.

Between these gasses, they have actually, literally had the effect of going up by 50 percent on the preindustrial concentrations of CO_2. We have increased the radiative forcing by about 2.5 watts per square meter. There are also some things that have actually decreased the radiative forcing or the heat trapping of the air system.

We put significant amount of aerosols into the earth's system for two reasons: One, when you combust fossil fuels, you not only liberate CO_2 into the atmosphere, you also put sulfur dioxide into the atmosphere, sulfur dioxide gets oxidized, and it forms particles in the atmosphere. When you have biomass burning in the tropics, it also puts carbonaceous aerosols into the atmosphere.

These aerosols can have two effects: First, they can directly reflect incoming solar radiation, hence, cooling the earth's surface. Second, they can change the optical properties of clouds, also potentially leading to a slight cooling of the earth's surface. So over the last 100 or so years, we have warmed the earth through putting greenhouse gasses into the atmosphere, but we have led to some offset of this warming due to our industrial practices of burning coal and biomass burning, to put aerosols in the atmosphere.

However, there are significant uncertainties associated with the amount of aerosols we put in the atmosphere, and even though there may be a significant offset in the so-called radiative forcing, this does not mean to say there will not be significant climatic implications. So we have learned that we have changed the heat forcing.

We then looked, the next part of the document then looked effectively at the convention, and the convention states that the goal or the objective is stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

What we did was we asked ourselves the question: What would it take to stabilize carbon dioxide, methane, and the other greenhouse gasses at different levels? We don't know today what we can define as a dangerous level. So we asked ourselves what would it take to stabilize at today's level, 360 parts per million, what would it take to stabilize at twice preindustrial levels, 550, and what would it take to stabilize at 750, almost triple preindustrial levels? We then did a series of calculations to find out basically what levels of emissions would be allowable.

If one looked at some of the figures in my testimony, we come to a number of conclusions. First, even if you could stabilize emissions at today's concentration, the atmospheric abundance of CO_2 would continue to rise for over the next 200 years because of its long atmospheric residence time and it would increase from 360 parts per million today to about 500 parts per million by the year 2200. So even if we stabilize emissions, atmospheric concentrations still go up for the next 200 years.

We then recognized that if you wanted to stabilize at literally any level between today's level of 350 parts per million and even 750 parts per million, that is triple preindustrial, you would have to have a significant reduction in greenhouse gas emissions below today's level eventually and, in fact, from the figures, what one can see is after the year 2200, you would have to have emission levels much less than today's.

We also looked to see how many greenhouse gasses could you put into the atmosphere over the next 100 years. If, indeed, one wants to stabilize at today's level, one would only be able to average about 2 to 3 to 4 gigatons per year. That is significantly less than what we put into the atmosphere today, which is around 6 to 7 gigatons per year.

If one wanted to stabilize at 550 parts per million, that is twice preindustrial, one would be able over the next 100 years to average between about 8 and 10 billion tons of carbon per year, that is only slightly greater than the 6 or 7 billion tons per year we put in today. If one looks at the projections of future emissions of carbon dioxide, which clearly depend on a lot of factors, such as population, Gross National Product, energy supply, energy prices, new technologies, then one finds that there is a plausible range of emission scenarios that could argue at the low end we could conceivably be, roughly, constant, that is to say, 6, 7 billion tons per year. But at the high end projected by the year 2100, the emissions could be as high as 35 billion tons per year. So what one notes, if you look to see what it would take to stabilize greenhouse gas emissions, particularly CO_2, compared to the most plausible futures in the absence of climate controls, one would need to have a significant reduction in emissions compared to most likely plausible futures. In other words, action would have to be taken to stabilize carbon dioxide at levels between 350 and 750 parts per million.

The last thing we looked at was something called the Global Warming Potential of these gasses, that is to say, how can you compare the effects of methane, a ton of methane versus a ton of carbon dioxide versus a ton of halocarbons. There is an index that basically can tell you what the relative influence of these gasses is on the earth's climate system.

We have recalculated all of these indices, we have got a better understanding of the carbon model, we have a better understanding of the atmospheric lifetimes of many of these gasses, and since the last two major assessments of 1990 and 1992, the indices have changed by somewhere between 0 and 30 percent, most of them have gone up by typically 20 percent.

What we should note, however, is these indices are not perfect indices. They are probably only accurate to plus or minus 35 percent, they are very important indices.

If one wants to put a national plan together, such as the United States where we want to look at the implications of all greenhouse gasses together, you have to have a way of relating methane to CO_2 to fluorocarbons. The implications of these new numbers for the U.S. National Action Plan is somewhat more effective than we previously thought insofar as the global warming potential for methane has gone up somewhat.

If I were to summarize, we know human activities have changed, the atmospheric concentrations of carbon dioxide led to a significant increase in the heat trapping of the earth's atmosphere. We have also increased the aerosol abundance of the earth's atmosphere, that will have somewhat of an offset, but we do not fully understand the implications for the earth's surface. New theoretical calculations have been performed so we can quantify the implications more exactly.

We have looked at the carbon dioxide situation, stabilization of emissions today would still lead to significant increase in concentrations over the next 200 years. And if one wanted to stabilize at any level below 750 parts per million, one would eventually have to have a decrease in emissions compared to today, and certainly reductions in the cumulative emissions over the next 100 years. And lastly, we have these new calculations for Global Warming Potential indices, not significantly different from before. We have more confidence in them, and they have a slightly beneficial effect on how you look at the U.S. National Action Plan.

Thank you.

[The prepared statement of Dr. Robert T. Watson follows:]

Statement of

Dr. Robert T. Watson
Associate Director for Environment
Office of Science and Technology Policy
Executive Office of the President

Mr. Chairman and Members of the Subcommittee:

My name is Robert Watson and I am the Associate Director for Environment in the Office of Science and Technology Policy. I welcome the interest of Congress in this very important issue of human-induced climate change, and appreciate the opportunity to meet with you this afternoon to discuss the recently released scientific assessment by Working Group I of the Intergovernmental Panel on Climate Change (IPCC) on the "Radiative Forcing of Climate Change".

The dramatic increase in world population and industrial activities during the last century is affecting the environment at all geographical scales from local to regional to global. Global issues such as human-induced climate change are no longer the sole concern of the scientific community and environmentalists, but their importance is now well recognized by the private sector and governments around the world. That human-induced climate change, otherwise known as global warming, is a serious issue was recognized at the Earth Summit in Rio de Janeiro, Brazil in 1992 when more than 150 countries signed the Framework Convention on Climate Change. The major objective of the Convention was stated to be:

> "stabilization of greenhouse concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner".

Sound national and international environmental policies must be based on a solid foundation of scientific, technical, and economic understanding of the relevant facts. The IPCC assessments provide a critical review of scientific, technical and socio-economic issues associated with human-induced climate change.

The first part of my testimony is a verbatim copy of the executive summary of the assessment, and the second part discusses the significance of the report.

The scope of the 1994 Working Group I of the Intergovernmental Panel on Climate Change (IPCC) is not comprehensive like the IPCC 1990 and 1992 assessments. The assessment includes five chapters related to the radiative effects of climate change, but does not discuss issues such as model predictions of climate change, observations of climate change, projected sea level rise, or ecological consequences of climate change. These issues will be reviewed in detail as part of the ongoing 1995 assessment.

The background documents upon which the executive summary was based was prepared by about 150 lead authors and contributors from about 20 countries, peer reviewed by 231 reviewers from 31 countries and non-governmental organizations (NGOs), and followed by a governmental review by experts from about 150 countries and NGO organizations. The executive summary and a summary for policymakers was agreed verbatim in Maastricht, Netherlands by delegates from 82 countries and a number of NGOs.

PART I: Executive Summary of 1994 IPCC Working Group I Assessment of Relative Radiative Forcing of Greenhouse Gases

Introduction

In its first Scientific Assessment of Climate Change in 1990, the IPCC concluded that the increase of greenhouse gas concentrations due to human activities would result in a warming of the Earth's surface. "Radiative forcing" is the name given to the effect which these gases have in altering the energy balance of Earth-atmosphere system and, using this concept, the 1990 report introduced a tool for policy makers, the Global Warming Potential, which allowed the relative warming effect of different gases to be compared. Other factors, natural and human, also caused radiative forcing. The 1990 report not only examined these factors, but also reviewed a wide range of information on how climate has behaved in the past and how it might change in the future as a result of human influence.

The 1992 IPCC supplementary report reviewed the key conclusions of the 1990 report and affirmed the basic understanding of climate change contained in the 1990 report. It did, however, provide more detail on two sources of negative radiative forcing - depletion of ozone in the stratosphere, and aerosols derived from anthropogenic emissions.

The scope of the present report covers only those factors which caused radiative forcing of climate change, and includes updated values of Global Warming Potentials. The full range of topics related to climate, including the response of climate to radiative forcing, will be covered in the second IPCC Scientific Assessment scheduled for publication in 1995.

Major new results since IPCC 1992

These new findings add to the detail of our knowledge but do not substantially change the essential results concerning radiative forcing of climate which appeared in the 1990 or the 1992 IPCC scientific assessments.

* *Revised values of Global Warming Potentials (GWP)* - compared to GWPs listed in the 1992 IPCC report most values are larger by typically 10-30%. The uncertainties in the new GWPs are typically ±35%.

* *Revised methane GWP* - includes both direct and indirect effects. While the product of the revised GWP for methane and the current estimated annual anthropogenic emissions is significantly less than that of carbon dioxide over a 100-year time horizon, it is comparable over a 20-year time horizon.

* *Stabilization of atmospheric carbon dioxide concentrations* - a range of carbon cycle models indicate that stabilization of atmospheric carbon dioxide concentration at all considered levels between one and two times today's concentrations (that is to say, between 350 and 750 ppmv) could be attained only with global anthropogenic emissions that eventually drop to substantially below 1990 levels.

* *Improved estimation of forcing by aerosols* - model calculations indicate that negative radiative forcing from sulfate aerosols and aerosols from biomass burning, when globally-averaged, may be a significant fraction of the positive radiative forcing caused by anthropogenic greenhouse gases since the pre-industrial era. However, the estimate of the radiative forcing is uncertain, moreover the forcing is highly regional and cannot be regarded as a simple offset to greenhouse gas forcing.

* *Recent low growth rate of carbon dioxide concentration is not unusual* - between 1991 and 1993 the rate of increase in the atmospheric concentrations of carbon dioxide slowed substantially compared to those average rates of increase over the previous decade. However, the modern observational record for carbon dioxide since the 1950s contain other periods of similarly low growth rates. In the latter half of 1993, the carbon dioxide growth rates increased.

* *Sharp reduction in methane growth rate* - the rate of increase of the atmospheric abundance of methane has declined over the last decade, slowing dramatically in 1991-92, though with an apparent increase in the growth rate in late 1993.

* *Climatic impact of Mt. Pinatubo* - the eruption of Mt. Pinatubo in June 1991 produced a large, transient increase of stratospheric aerosols which resulted in a surface cooling over about 2 years estimated from observations to be about 0.4 °C, consistent with model simulations which predicted a global mean cooling of 0.4 to 0.6°C.

* *Global carbon budget* - New estimates of terrestrial carbon uptake during the 1980s have better quantified the known sinks, particularly forest re-growth in the Northern Hemisphere.

Sources of radiative forcing and their magnitude

Anthropogenic and natural factors cause radiative forcing if various magnitudes and of different signs. The concept of radiative forcing enables us to compare the potential effects of different factors, though care must be taken where these factors have large seasonal or regional variation.

First, we consider the bases carbon dioxide, methane, nitrous oxide and the halocarbons which have increased through human activities and which are well-mixed throughout the atmosphere.

* the increase in carbon dioxide (CO_2) since the pre-industrial era (280-360 ppmv) makes the largest individual contribution to greenhouse gas radiative forcing: 1.5 Wm^{-2} as reported in previous IPCC reports;

* the increase of methane (CH_4) since pre-industrial times (0.1 to 1.7 ppmv) contributes about 0.1 Wm^{-2} to radiative forcing;

* the increase of nitrous oxide (N_O) since pre-industrial times (275-310 ppbv) contributes about 0.1 Wm^{-2} to radiative forcing;

* the observed concentrations of halocarbons, including CFCs, 11, 12, 113, 114, 115, methyl chloroform and carbon tetrachloride, have resulted in a direct radiative forcing of about 0.3 Wm^{-2};

* the atmospheric concentrations of a number of HCFCs and HFCs, which are being used as substitutes for halocarbons controlled under the Montreal Protocol have increased substantially. Their combined contribution to radiative forcing is, however, still less than 0.05 Wm^{-2} because of their low atmospheric concentrations.

Second, we consider changes in concentrations of ozone and aerosols are believed to contribute significantly to radiative forcing. Patterns of historical change in these constituents are strongly regional in character, leading to two important consequences: (1) estimates of their globally-averaged radiative forcing are less certain than for the well-mixed gases (because the patterns of change are not well-quantified) and (ii) any negative forcing due to aerosols cannot be regarded as a simple offset to the effect of greenhouse gases (because the regional patterns of the forcing are different). Nevertheless, we report such estimates in order to provide a broad indication of their relative magnitude.

* Limited observations and model simulations suggest that tropospheric ozone in the Northern Hemisphere has increased since pre-industrial times resulting in a global average radiative forcing of 0.2-0.6 Wm^{-2}.

* Halocarbon-induced depletion of ozone in the stratosphere has resulted in a negative global average radiative forcing of about -0.1 Wm^2. This has occurred mainly since the late 1970s over which period it has been of similar magnitude, but opposite sign, to the forcing caused by the halocarbons. Prior to the onset of significant ozone depletion the radiative forcing due to the halocarbons was between +0.1 and 0.2 Wm^{-2}.

* Anthropogenic particles in the atmosphere derived from emissions of sulfur dioxide and from biomass burning, exert a net negative radiative forcing. The direct forcing, globally averaged, are probably in the ranges of -0.25 to -0.9 Wm^{-2} for sulfate aerosols and -0.05 to -0.6 Wm^{-2} for aerosols from biomass burning. The *indirect* effect of aerosols, due to their effect on cloud properties, may cause a further negative forcing of a magnitude similar to the direct effect. The forcing shows large regional variations, with the largest values in industrialized regions in the Northern Hemisphere.

Third, we consider natural factors which can also exert positive or negative radiative forcing:

* Since about 1850 change in the Sun's output may have resulted in a positive radiative forcing estimated at between 0.1 and 0.5 Wm^{-2}.

* Some volcanic eruptions such as that of Mt. Pinatubo in June 1991 result in a short-lived (a few years) increase in aerosols in the stratosphere, causing a large (about 4 Wm^{-2} in the case of Mt. Pinatubo) but short-lived negative radiative forcing of climate. The effect of the Mt. Pinatubo eruption has been detected in the observed temperature record.

Trends in greenhouse gas and aerosol concentrations

* Over the decade 1980-89 the atmospheric abundance of CO_2 increased at an average rate of about 1.5 ppmv (0.4% or 3.2 billion tonnes of carbon) per year as a result of human activities, equivalent to approximately 50% of anthropogenic emissions over the same period.

* The rate of increase of the atmospheric abundance of methane has declined over the last decade, slowing dramatically in 1991-92 though with an apparent increase in the growth rate in ate 1993. The average trend over 1980-90 is about 13 ppbv (0.8% or 37 million tonnes of methane) per year.

* The atmospheric abundance of nitrous oxide increased at an average annual rage (1980-1990) or about 0.8 ppbv (0.25% or 3.9 million tonnes of nitrogen) per year. The observations indicate that the growth rates varied during this period.

- The rates of increase of atmospheric concentrations of several major ozone-depleting halocarbons have fallen, demonstrating the impact of the Montreal Protocol and its amendments and adjustments. The total amount of organic chlorine in the troposphere increased by only 1.6% in 1992, about half of the rate of increase (2.9%) in 1989.

- The monitoring network for tropospheric ozone is sparse, making detection of global trends difficult. Since the 1960s concentrations of tropospheric ozone have almost certainly increased over large parts of the Northern Hemisphere but trends during the 1980s were small and of variable sign.

- Anthropogenic aerosol and precursor emissions have increased over the past 150 years, but while local trends (positive and negative) in concentrations are evident, no clear picture emerges of a contemporary global grand, in atmospheric concentrations of anthropogenic aerosols in the size range important for radiative forcing.

The stabilization of greenhouse gas concentrations

Several carbon cycle models have been used to study the implications for future atmospheric concentrations of carbon dioxide, of a range of global anthropogenic emissions scenarios. The same models have been used to study the broad implications, in terms of *emissions*, of stabilizing carbon dioxide *concentrations* in the range of 350 ppmv (near current levels) to 750 ppmv. Differences in projected concentrations and emissions between models are typically ±15%; additional uncertainties arise from the various assumptions and simplifications used. The following results emerge.

- If carbon dioxide emissions were maintained at today's levels, they would lead to a nearly constant rate of increase in atmospheric concentrations for at least two centuries, reaching about 500 ppmv (approaching twice pre-industrial concentration) by the end of the 21st century.

- A stable level of carbon dioxide concentration at values up to 750 ppmv can be maintained only with anthropogenic emissions that eventually drop below 1990 levels.

- To a first approximation the eventual stabilized concentration is governed more by the accumulated CO_2 emissions from now until the time of stabilization, and less by the exact path taken to reach stabilization. This means that, for example, for a given stabilization scenario, higher emissions in early decades imply lower emissions later on. For the range of arbitrary stabilization cases studied accumulated emissions to the end of the 21st century were between 300 and 430 GtC for stabilization at 350 ppmv, between 880 and 1060 GtC for stabilization at 550 ppmv, and between 1220 and 1420 for stabilization at 750 ppmv. For comparison, the corresponding accumulated emissions for IPCC IS92 emissions scenarios are 770 to 2190 GtC.

If methane emissions were maintained at today's levels, atmospheric concentrations would effectively stabilize within 50 years at about 1900 ppbv, 11% higher than at present. Conversely, a reduction in annual methane emissions to levels about 35 million tonnes (roughly 10% of anthropogenic emissions) below current levels would stabilize concentrations at today's levels. (This calculation assumes that natural sources of atmospheric losses of methane are not affected by changing climate and atmospheric composition over the next century).

If emissions of nitrous oxide were maintained at today's levels, atmospheric concentrations would effectively stabilize after several centuries at about 400 ppbv, 30% higher than at present and 50% above pre-industrial levels. Conversely, a reduction of more than 50% of anthropogenic sources would stabilize concentrations at today's level of about 310 ppbv.

In contrast to the long-lived greenhouse gases, aerosols and tropospheric ozone are rapidly removed from the atmosphere and stabilization of precursors would lead quickly to stable atmospheric concentrations.

The predictions of changes in atmospheric chlorine loading indicate that the depletion of stratospheric ozone should peak within the next decade and then slowly recover during the first half of the next century.

Global Warming Potential

Revised Global Warming Potentials have been calculated. Furthermore, GWPs have been calculated for a number of new species, in particular hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

The GWP concept is difficult to apply to short-lived species (for example, oxides if nitrogen, non-methane hydrocarbons and aerosols). New tools need to be developed to characterize their radiative forcing.

PART II: Significance of IPCC Assessment:

This section of the report attempts to briefly interpret the significance of a few of the key findings.

1. Global Warming Potentials: The two key findings are: (i) the direct and indirect GWPs for methane are better quantified; and (ii) all GWPs have been revised upward by up to 35% because of revised lifetimes and a modified carbon cycle model. The revised upward values of the Global Warming Potentials of methane, halocarbons, and nitrous oxide will have a small, but positive influence on increasing the effectiveness of the U.S. National Action Plan.

2. Aerosols: While we have an improved understanding of: (i) the different sources of aerosols (emissions of sulfur dioxide arising from the combustion of fossil fuels, and biomass burning), and (ii) the influence of aerosols on radiative forcing, the implications of increased atmospheric concentrations of aerosols on changes in surface climate are not as well understood. Quantification of the regional and global effects of aerosols on surface climate will require fully coupled ocean-atmosphere models. Understanding the influence of aerosols on the Earth's climate is a high priority research area for the U.S. Global Change Research Program.

3. Carbon Cycle Model Calculations: Carbon cycle models have been used to predict the atmospheric concentrations of carbon dioxide that result from a given emissions scenario, and to evaluate what emissions would be consistent with different stabilization targets for atmospheric carbon dioxide. The calculated atmospheric concentrations of carbon dioxide, for a given emissions scenario, are significantly influenced by assumptions and uncertainties in ocean and terrestrial biotic uptake and release, leading to differences of up to 30% in projected changes in atmospheric concentrations. Carbon cycle models suggest that:

    - because of the long residence time for carbon dioxide, stabilization of emissions at current levels leads to a nearly constant rate of increase in atmospheric concentrations for at least two centuries with the concentration reaching 480-540 ppmv by 2100, about twice pre-industrial (Figure 1), and 120-180 ppmv greater than present levels;

    - stabilization of carbon dioxide concentrations by 2150 at today's level (~350 ppmv - Figure 2) would require: (i) significant reductions in global emissions compared to all the IPCC 1992 scenarios (a-f) during the next century (Figure 3); and (ii) limiting cumulative emissions over the next century to between 300 and 430 GtC, i.e., an average of 3 to 4.3 GtC per year (Figure 4), which is significantly lower than current emissions of about 7 GtC per year. In addition, emissions in the following century would have to be even lower (close to zero). Cumulative emissions between 1990 and 2100 from IPCC scenarios (a-f) range from 770 to 2190 GtC, averaging 7 to 20 GtC per year.

    - stabilization of carbon dioxide concentrations by 2150 at twice the pre-industrial level (~550 ppmv - Figure 2) would require: (i) significant reductions in global emissions compared to the central and high IPCC 1992 scenarios (a, b and e) during the next century and emissions after 2100 much lower than current levels (Figure 3); and (ii) cumulative emissions over the next century of between 880 and 1060 GtC, i.e., an average of 8.8 to 10.6 GtC (Figure 4), which is slightly higher than current emissions of about 7 GtC per year.

    - stabilization of carbon dioxide concentrations by 2250 at about twice today's level (~750 ppmv - Figure 2), which is also about three times the pre-industrial level) would require: (i) significant reductions in global emissions compared to the central and high IPCC 1992 scenarios (a, b and e) during the next century and emissions after 2100 lower than current levels (Figure 3); and (ii) cumulative emissions over the next century of between 1220 and 1420 GtC, i.e., an average of 12.2-14.2 GtC (Figure 4), compared to current emissions of about 7 GtC per year.

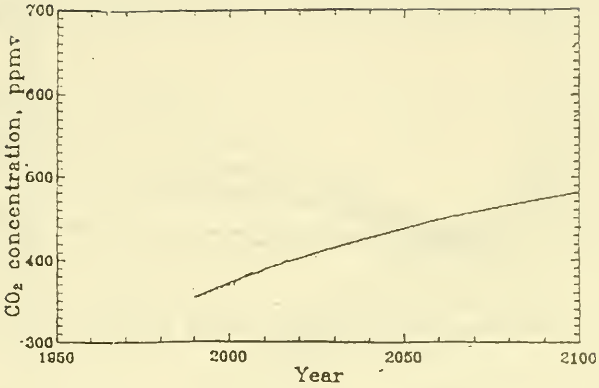


FIGURE 1

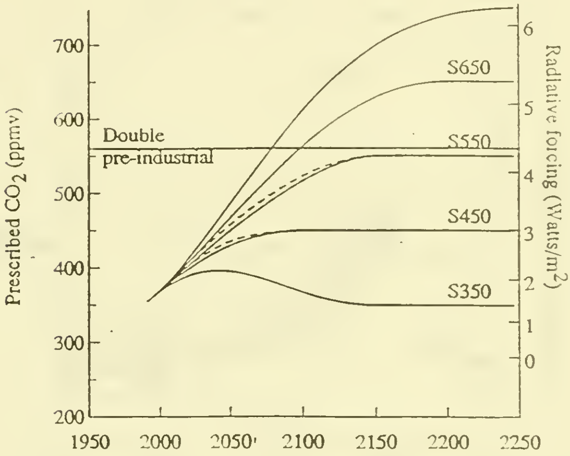


FIGURE 2

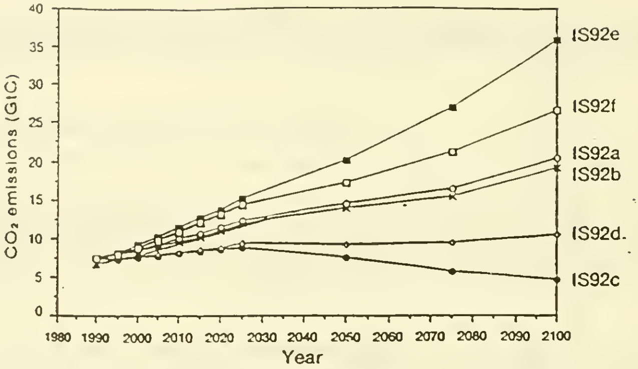


FIGURE 3a

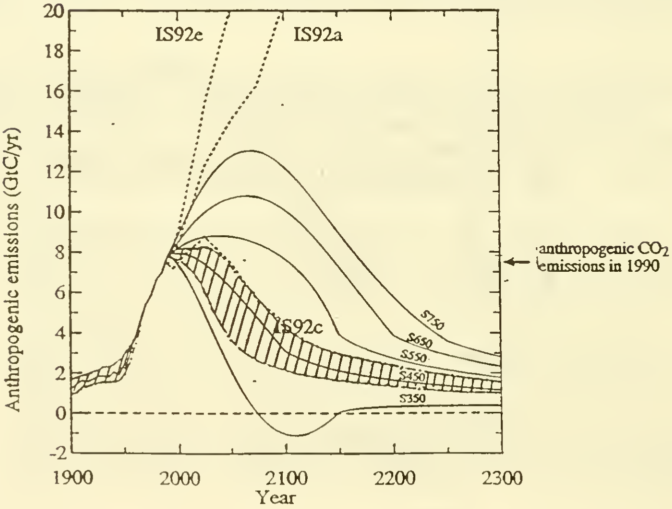
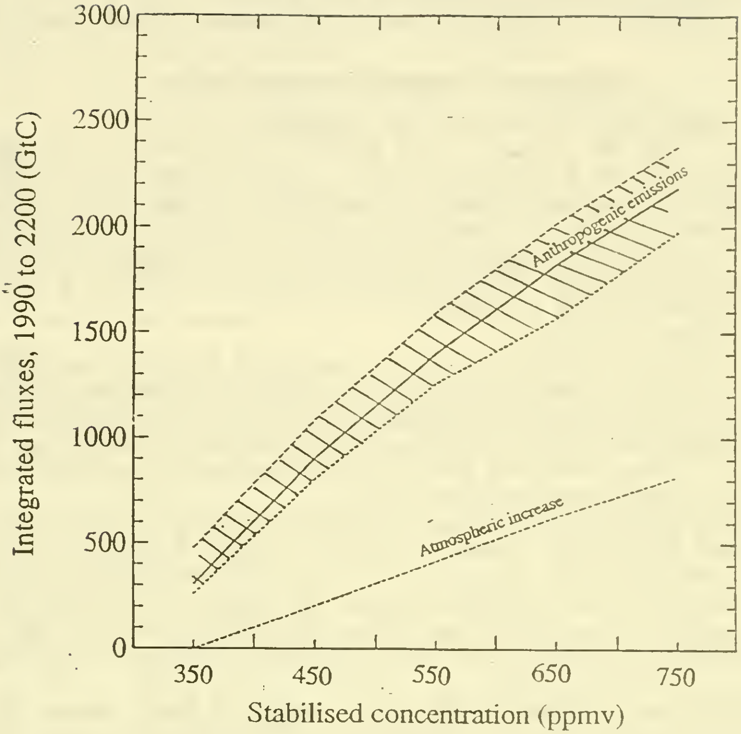


FIGURE 3b



Integrated fluxes, 1990 to 2200 (GtC)
3000
2500
2000
1500
1000
500
0
350
450
550
650
750
Stabilised concentration (ppmv)
Anthropogenic emissions
Atmospheric increase

FIGURE 4

Mr. SHARP. Thank you very much, Mr. Watson.

Mr. Pomerance, welcome back. We are happy to hear from you at this point.

STATEMENT OF RAFE POMERANCE

Mr. POMERANCE. Thank you, Mr. Chairman.

I would just like to say it is a special privilege to be here this afternoon to be at a hearing with you, and to thank you for your leadership over so many years. In particular on the energy issue, it has been an honor to watch all that you have done over the years, and I think you have added an enormous amount to the policy-making capability of this country, and we all have a lot to thank you for, so it is a privilege.

Mr. SHARP. Thank you.

Mr. POMERANCE. Mr. Chairman, I am glad to have the opportunity to come to discuss what we in the United States and the international community are doing as we approach the first session of the Conference of the Parties of the Framework Convention on Climate Change. This first meeting of the parties is due to be held in Berlin in late March and early April.

The Conference of the Parties scheduled for Berlin is called upon to address several key issues at its first session. Among those are matters related to the adequacy of the commitments in the convention, criteria for joint implementation, the adoption of rules of procedure, and the approval of guidelines for both the preparation of national communications and for the review of those communications.

I would like to review with you a couple of these issues. Mr. Chairman, on the issue of adequacy, the administration takes the position that the current commitments under the Climate Convention are not adequate. We based this view on the following: First, we believe that the existing aim will be inadequate to achieve the ultimate objective of the convention. Even if all Annex I countries, OECD countries and countries with economies in transition were to return greenhouse gas emissions to 1990 levels by the year 2000, global concentrations would continue to rise. That would, of course, be true even if they were to stabilize them on a continuous basis thereafter.

Second, the convention commitments are guided by the aim only through the year 2000. Although the convention envisions that measures should be taken after the year 2000, there is no aim to guide these measures beyond 2000.

Third, the existing commitments are limited. The OECD countries have pledged only to report on their efforts to reduce their emissions of greenhouse gasses, with the aim of returning those emissions to 1990 levels by the year 2000. Meanwhile, other countries are obligated to inventory their emissions and take measures, with no aims or goals to gauge their progress.

So where do we go from here? The seriousness of the problem is in no way diminished. The new science that has emerged provides no indication that we can relax our efforts to act.

In fact, earlier findings continue to be supported. Therefore, the United States proposed at the most recent INC meeting in Geneva that the parties embark, beginning at Berlin, on a process to consider next steps. We take as a starting point that existing policies and aims, given our present knowledge, are not adequate. We take as our criteria for next steps, that they should be comprehensive, flexible, sustainable, pragmatic, and innovative.

Given these criteria, we see five goals, and we enumerated these at the last meeting in Geneva at the end of August: First, we need a new aim under the convention, one that takes us beyond the year 2000.

Second, we must examine opportunities for common actions or a menu of common actions to meet a new post-2000 aim. While we must maintain national flexibility, common processes or initiatives will help to ensure that nations match rhetoric with reality.

Third, we must strive to ensure that public and private sector experts are fully engaged in and provide technical support to the convention process.

Fourth, we must strengthen the convention process itself. Continued work in this area will be vital in building confidence among the parties and interested constituencies that the convention can accomplish its objectives with due regard to concerns for development and sustainable growth.

Fifth and finally, there must be broader participation in making the convention a success. The efforts of an increasing number of countries beyond those of Annex I will be required to solve this global problem.

Mr. Chairman, with this background, let me now provide a brief review of the most contentious items at the recent INC session, the adequacy of commitments and the issue of joint implementation.

I have reviewed the U.S. position on adequacy. Let me begin by stating that we were solidly supported by most other OECD countries. However, during the discussion at the session, there were significant differences among delegations. Some countries stated their view that no new steps were warranted. Other countries believed that existing commitments must be met before agreeing to new commitments, and still other countries stated that not only developed countries but rather all countries must take action.

However, let me state that we believe that the positions of many of these other countries has been and will continue to be influenced by the changing debate. Therefore, views taken at this session ought not to be considered final or necessarily binding.

Some developing countries argued against initiating negotiations on a protocol or establishing a process to begin negotiations at the COP in Berlin.

A second group, made up primarily of Annex I countries, supported initiating negotiations on next steps for approval at COP 1 and a strong declaration by the ministers at that meeting. A small subset of this group argued for a protocol detailing specific measures on next steps, to be opened for signature in Berlin, while several other delegations said they would like to have a protocol agreed to for Berlin but considered it impossible to negotiate one in the time available before COP 1.

Let me turn briefly to the other key issue which has attracted so much attention—joint implementation. The discussion on this issue at the August INC session indicated significant differences in the position of Annex I countries on first how to design an international pilot program and, two, on how and when to apply possible credits.

However, some progress was clearly made. For example, if you look back a couple of sessions, we feel that generally there is greater support now amongst the parties for an agreement to a pilot phase for a joint implementation program. Furthermore, there are a number of other areas in which we seem to be coalescing on aspects of a possible program.

However, unlike previous sessions, at the most recent session, there was no unified G-77 position or spokesperson. Some developing countries opposed emission credits for joint implementation and the inclusion of non-Annex I countries—that is, developing countries—as eligible host countries in the pilot phase.

Annex-I countries unanimously supported a pilot phase but differed on the definition of components in the pilot. The European Union, which we feel has moved in some important ways toward our position, generally supported a pilot phase open to all countries covering all greenhouse gasses, including sources and sinks. But we differed as to the timing of when credits should be available.

Mr. Chairman, before I conclude, I would like to offer a few general observations about the process and our future course internationally. While progress at this session was not, at least on the surface, as promising as might have been desired, the international community is moving forward.

For example, the absence of agreed criteria on joint implementation at this session in no way diminishes the extremely positive feedback that the United States has been receiving for our own JI initiative. I believe that we are well positioned to lead on this aspect of the global program to mitigate climate change.

Furthermore, to date, 14 countries have submitted national reports as required under the provisions of the convention, and additional submissions are expected prior to the first meeting of the conference of the parties. The U.S. report, which I think we distributed this morning, was one of the 14.

I believe our own report sets a high standard, one which we must continue to uphold through continued strong domestic action. In my view, the level of commitment demonstrated by all countries in the preparation of their communications, and of the National Climate Action strategies that underlie them, provides room for considerable optimism about the future of the convention.

Finally, the broad agreement among OECD countries on the need to move forward with next steps is heartening. While the exact course of action is still a matter for deliberation, I believe that we can and must continue our progress on this issue.

Thank you, Mr. Chairman. I would be pleased to answer any questions you might have.

[The prepared statement of Rafe Pomerance follows:]

TESTIMONY OF
RAFE POMERANCE
DEPUTY ASSISTANT SECRETARY FOR ENVIRONMENT AND DEVELOPMENT
DEPARTMENT OF STATE
OCTOBER 6, 1994

GOOD AFTERNOON, MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE. I AM GLAD TO HAVE THE OPPORTUNITY TO COME AND DISCUSS WHAT WE IN THE UNITED STATES AND THE INTERNATIONAL COMMUNITY ARE DOING AS WE APPROACH THE FIRST SESSION OF THE CONFERENCE OF THE PARTIES OF THE FRAMEWORK CONVENTION ON CLIMATE CHANGE. THIS FIRST MEETING OF THE PARTIES IS TO BE HELD IN BERLIN IN LATE MARCH AND EARLY APRIL.

THE CLIMATE CONVENTION ENVISIONS AN AMBITIOUS ULTIMATE OBJECTIVE:

> "... STABILIZATION OF GREENHOUSE GAS CONCENTRATIONS IN THE ATMOSPHERE AT A LEVEL WHICH WOULD PREVENT DANGEROUS ANTHROPOGENIC INTERFERENCE WITH THE CLIMATE SYSTEM. SUCH A LEVEL SHOULD BE ACHIEVED WITHIN A TIME-FRAME SUFFICIENT TO ALLOW ECOSYSTEMS TO ADAPT NATURALLY TO CLIMATE CHANGE, TO ENSURE THAT FOOD PRODUCTION IS NOT THREATENED AND TO ENABLE ECONOMIC DEVELOPMENT TO PROCEED IN A SUSTAINABLE MANNER."

ACHIEVING THIS OBJECTIVE WILL REQUIRE A VERY LONG JOURNEY, WHICH WE HAVE JUST BEGUN. THE FIRST MEETING OF THE CONFERENCE OF THE PARTIES IS THE NEXT STEP IN THIS JOURNEY; IT WILL BE THE FIRST CHANCE FOR ALL THE PARTIES TO THE CONVENTION TO CONSIDER PROGRESS MADE AND THE FUTURE DIRECTION THAT MUST BE CHARTED.

THE CONFERENCE OF THE PARTIES, SCHEDULED FOR BERLIN IN LATE MARCH TO EARLY APRIL OF 1995, IS CALLED UPON TO ADDRESS SEVERAL KEY ISSUES AT ITS FIRST SESSION. AMONG THOSE ARE MATTERS RELATED TO THE ADEQUACY OF THE COMMITMENTS IN THE CONVENTION, CRITERIA FOR JOINT IMPLEMENTATION, THE ADOPTION OF RULES OF PROCEDURE AND THE APPROVAL OF GUIDELINES FOR BOTH THE PREPARATION OF NATIONAL COMMUNICATIONS AND FOR THE REVIEW OF THOSE COMMUNICATIONS. I WOULD LIKE TO REVIEW WITH YOU A COUPLE OF THESE ISSUES HERE.

MR. CHAIRMAN, AT THE INTERGOVERNMENTAL NEGOTIATING COMMITTEE SESSION IN FEBRUARY, INC 9, THE UNITED STATES TOOK THE POSITION THAT CURRENT COMMITMENTS UNDER THE CLIMATE CONVENTION ARE NOT ADEQUATE. WE BASED THIS VIEW ON THE FOLLOWING CONSIDERATIONS:

- FIRST, WE BELIEVE THE EXISTING AIM WILL BE INADEQUATE TO ACHIEVE THE ULTIMATE OBJECTIVE OF THE CONVENTION; EVEN IF ALL ANNEX I COUNTRIES (OECD COUNTRIES AND COUNTRIES WITH ECONOMIES IN TRANSITION TO MARKET ECONOMIES) WERE TO RETURN GREENHOUSE GAS EMISSIONS TO 1990 LEVELS BY THE YEAR 2000 -- AND MAINTAIN THEM AT THAT LEVEL THEREAFTER -- GLOBAL CONCENTRATIONS WOULD CONTINUE TO RISE. THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC) RECENTLY ANALYZED THE RESULTS IF ANNEX I COUNTRIES SUCCEEDED IN STABILIZING THEIR EMISSIONS AT 1990 LEVELS THROUGH THE END OF THE NEXT CENTURY. EXPECTED INCREASES IN GLOBAL EMISSIONS -- NOT CONCENTRATIONS -- WERE REDUCED ONLY ABOUT TEN PERCENT UNDER THIS SCENARIO, AND THESE EMISSIONS REDUCTIONS WOULD HAVE A VERY LIMITED EFFECT ON CONCENTRATIONS. IN FACT, CONCENTRATIONS WOULD CONTINUE TO RISE THROUGH THE 21ST CENTURY.

- SECOND, THE CONVENTION COMMITMENTS ARE GUIDED BY THE "AIM" ONLY THROUGH THE YEAR 2000. ALTHOUGH THE CONVENTION

ENVISIONS THAT MEASURES SHOULD BE TAKEN AFTER THE YEAR 2000, THERE IS NO AIM TO GUIDE THESE MEASURES BEYOND THE TURN OF THE CENTURY. THE PARTIES TO THE CONVENTION MUST DETERMINE THE NEXT STEP.

- AND THIRD, THE EXISTING COMMITMENTS ARE LIMITED IN SCOPE. THE OECD COUNTRIES HAVE PLEDGED ONLY TO REPORT ON THEIR EFFORTS TO REDUCE THEIR EMISSIONS OF GREENHOUSE GASES -- ALBEIT WITH THE "AIM" OF RETURNING THESE EMISSIONS TO 1990 LEVELS BY THE YEAR 2000. MEANWHILE, OTHER COUNTRIES ARE OBLIGATED TO INVENTORY THEIR EMISSIONS AND TAKE MEASURES -- WITH NO AIMS OR GOALS TO GAUGE THEIR PROGRESS.

IN ADDITION, ANNEX 1 COUNTRIES ARE FACING CONSIDERABLE DIFFICULTIES IN REACHING THEIR AIMS FOR THE YEAR 2000. THE INTERNATIONAL ENERGY AGENCY HAS SUGGESTED THAT FEW OECD COUNTRIES ARE IN A POSITION TO REACH THEIR COMMITMENTS, WHICH IN SOME CASES GO BEYOND THE NON-BINDING AIM OF THE CONVENTION. IN THE UNITED STATES, UNDER THE CLINTON ADMINISTRATION, WE HAVE ENJOYED VIGOROUS ECONOMIC GROWTH AND LOWER ENERGY PRICES. THESE, HOWEVER, HAVE MADE LIMITING EMISSIONS DIFFICULT.

SO, WHERE DO WE GO FROM HERE? THE SERIOUSNESS OF THE PROBLEM IS IN NO WAY DIMINISHED. THE NEW SCIENCE THAT HAS EMERGED PROVIDES NO INDICATION THAT WE CAN RELAX OUR EFFORTS TO ACT; IN FACT, EARLIER FINDINGS CONTINUE TO BE SUPPORTED. THEREFORE, THE UNITED STATES PROPOSED, AT THE MOST RECENT INTERGOVERNMENTAL NEGOTIATING COMMITTEE MEETING IN GENEVA, THAT THE CONVENTION PARTIES EMBARK, BEGINNING AT BERLIN, ON A PROCESS TO CONSIDER NEXT STEPS UNDER THE CLIMATE CONVENTION. WE TAKE AS A STARTING POINT THAT EXISTING POLICIES AND AIMS, GIVEN OUR PRESENT KNOWLEDGE, ARE NOT ADEQUATE. WE TAKE AS OUR CRITERIA FOR NEXT STEPS THAT THEY SHOULD BE COMPREHENSIVE, FLEXIBLE, SUSTAINABLE, PRAGMATIC AND INNOVATIVE.

GIVEN THESE CRITERIA, WE SEE FIVE GOALS:

- FIRST, WE NEED A NEW AIM UNDER THE CONVENTION, ONE THAT TAKES US BEYOND THE YEAR 2000. CLIMATE CHANGE IS A GLOBAL CHALLENGE, ONE THAT FORCES US TO THINK GLOBALLY OVER THE LONG-TERM. FINDING A NEW AIM WILL HELP US TO MAKE THAT CHANGE IN OUR THINKING.

- SECOND WE MUST EXAMINE OPPORTUNITIES FOR COMMON ACTIONS -- OR A MENU OF COMMON ACTIONS -- TO MEET THIS NEW POST-2000 AIM. WHILE WE MUST MAINTAIN NATIONAL FLEXIBILITY, COMMON PROCESSES OR INITIATIVES WILL HELP TO ENSURE THAT NATIONS MATCH RHETORIC WITH REALITY. TO DATE, ONLY A FEW NATIONS HAVE DEVELOPED CLEAR, SUBSTANTIVE PROPOSALS FOR REDUCING EMISSIONS THAT WILL ENABLE THEM TO MEET THE INITIAL AIM OF THE CONVENTION. WE NEED TO BROADEN THE BASIS FOR DISCUSSION SO MORE COUNTRIES CAN TAKE PART.

- THIRD, WE MUST STRIVE TO ENSURE THAT PUBLIC AND PRIVATE SECTOR EXPERTS ARE FULLY ENGAGED IN AND PROVIDE TECHNICAL SUPPORT TO THE CONVENTION PROCESS. OTHER GLOBAL ENVIRONMENTAL NEGOTIATIONS, LIKE THE MONTREAL PROTOCOL, HAVE DEMONSTRATED THAT THESE GROUPS HAVE SUBSTANTIAL WISDOM TO LEND TO THE PROCESS OF SUSTAINABLE DEVELOPMENT.

- FOURTH, WE MUST STRENGTHEN THE CONVENTION PROCESS ITSELF. CONTINUED WORK IN THIS AREA MUST PROCEED SIMULTANEOUSLY WITH THE CONSIDERATION OF NEXT STEPS, BECAUSE CONTINUED PROGRESS WILL BE VITAL IN BUILDING CONFIDENCE AMONG THE PARTIES AND INTERESTED CONSTITUENCIES THAT THE CONVENTION CAN ACCOMPLISH ITS OBJECTIVES WITH DUE REGARD TO CONCERNS FOR DEVELOPMENT AND SUSTAINABLE GROWTH.

- FIFTH AND FINALLY, THERE MUST BE BROADER PARTICIPATION IN MAKING THE CONVENTION A SUCCESS. THE INTERNATIONAL COMMUNITY MUST RECOGNIZE -- AND ACT UPON THE REALIZATION -- THAT THE EFFORTS OF AN INCREASING NUMBER OF COUNTRIES, BEYOND THOSE OF THE OECD AND THOSE WITH ECONOMIES IN TRANSITION TO MARKET ECONOMIES, WILL BE REQUIRED TO SOLVE THIS GLOBAL PROBLEM.

MR CHAIRMAN, WITH THIS BACKGROUND, LET ME NOW PROVIDE A BRIEF REVIEW OF THE TWO MOST CONTENTIOUS ITEMS AT THE RECENT INC SESSION (WHICH MET FROM AUGUST 22- SEPTEMBER 2 IN GENEVA): THE ADEQUACY OF THE COMMITMENTS, AND THE ISSUE OF JOINT IMPLEMENTATION.

ADEQUACY

I HAVE ALREADY REVIEWED THE U.S. POSITION ON THIS MATTER. LET ME BEGIN BY STATING THAT WE WERE SOLIDLY SUPPORTED BY MOST OTHER OECD COUNTRIES. HOWEVER, DURING THE DISCUSSION AT THE SESSION, THERE WERE SIGNIFICANT DIFFERENCES AMONG DELEGATIONS. "SOME COUNTRIES" STATED THEIR VIEW THAT NO NEW STEPS WERE WARRANTED; "OTHER COUNTRIES" BELIEVED THAT EXISTING COMMITMENTS MUST BE MET BEFORE AGREEING TO NEW COMMITMENTS; AND STILL "OTHER COUNTRIES" STATED THAT NOT ONLY DEVELOPED COUNTRIES, BUT RATHER ALL COUNTRIES MUST TAKE ACTION. HOWEVER, LET ME STATE THAT WE BELIEVE THAT THE POSITIONS OF MANY OF THESE OTHER COUNTRIES HAS BEEN -- AND WILL CONTINUE TO BE -- INFLUENCED BY THE CHANGING DEBATE. THEREFORE, VIEWS TAKEN AT THIS SESSION OUGHT NOT TO BE CONSIDERED FINAL OR NECESSARILY BINDING.

THE DEVELOPING COUNTRIES (THE G-77), AND IN PARTICULAR, SAUDI ARABIA, AND ALGERIA (WHICH OFTEN SPOKE ON BEHALF OF THE G-77 AS ITS PRESIDENT) PLUS BRAZIL, CHINA, SOUTH KOREA, AND COLOMBIA, ARGUED AGAINST INITIATING NEGOTIATIONS ON A PROTOCOL OR ESTABLISHING A PROCESS TO BEGIN NEGOTIATIONS AT THE COP 1 IN BERLIN.

A SECOND GROUP, MADE UP PRIMARILY OF ANNEX I COUNTRIES (OECD COUNTRIES AND COUNTRIES IN TRANSITION) BUT ALSO URUGUAY, ARGENTINA, MALAYSIA, AND KENYA, SUPPORTED INITIATING NEGOTIATIONS ON NEXT STEPS FOR APPROVAL AT COP 1 AND A STRONG DECLARATION BY THE MINISTERS AT COP 1. A SMALL SUBSET OF THIS GROUP, LED BY GERMANY, AND INCLUDING DENMARK AND THE SMALL ISLAND STATES (AOSIS) ARGUED FOR A PROTOCOL DETAILING SPECIFIC MEASURES ON NEXT STEPS, TO BE OPENED FOR SIGNATURE IN BERLIN. SEVERAL OTHER DELEGATIONS SAID THEY WOULD LIKE TO HAVE A PROTOCOL AGREED TO FOR BERLIN BUT CONSIDERED IT IMPOSSIBLE TO NEGOTIATE ONE IN THE TIME AVAILABLE BEFORE COP 1.

NEARLY ALL ANNEX 1 COUNTRIES SUPPORTED THE U.S. IN AGREEING ON THE NEED TO BROADEN THE NUMBER OF COUNTRIES THAT WOULD HAVE FURTHER COMMITMENTS IN A PROTOCOL. ANNEX I COUNTRIES PARTICULARLY URGED THAT THE MORE INDUSTRIALIZED DEVELOPING COUNTRIES BE INCLUDED IN CONSIDERING NEXT STEPS.

JOINT IMPLEMENTATION

LET ME NOW TURN TO THE OTHER KEY ISSUE WHICH HAS ATTRACTED SO MUCH ATTENTION: JOINT IMPLEMENTATION. AS UNDERSTOOD BY THE UNITED STATES, JI IS A PROCESS UNDER WHICH ONE COUNTRY COULD TAKE ACTIONS IN ANOTHER COUNTRY AND CLAIM CREDIT FOR THOSE EMISSION REDUCTIONS TOWARD ITS DOMESTIC GOAL. AS AT PREVIOUS INC SESSIONS, NOT ONLY THE MECHANICS OF THE OPERATION OF SUCH A PROCESS, BUT THE INTERPRETATION OF THE PHRASE ITSELF, WAS VIGOROUSLY DEBATED. THE DISCUSSION ON THIS ISSUE AT THE AUGUST

INC SESSION INDICATED SIGNIFICANT DIFFERENCES IN THE POSITIONS OF ANNEX I COUNTRIES ON (1) HOW TO DESIGN AN INTERNATIONAL PILOT PROGRAM AND (2) ON HOW AND WHEN TO APPLY THESE CREDITS. HOWEVER, SOME PROGRESS WAS CLEARLY MADE. FOR EXAMPLE, THERE SEEMS TO BE AGREEMENT THAT JI SHOULD PROCEED THROUGH A PILOT PHASE.

UNLIKE AT PREVIOUS SESSIONS, THERE WAS NO UNIFIED G-77 POSITION OR SPOKESPERSON. OPEC COUNTIES, AS WELL AS BRAZIL, CHINA, SOUTH KOREA, ASIAN NEWLY INDUSTRIALIZED COUNTRIES AND AFRICAN COUNTRIES OPPOSED EMISSION CREDITS AND THE INCLUSION OF NON-ANNEX I COUNTRIES AS ELIGIBLE HOST COUNTRIES IN THE PILOT PHASE. ANNEX I COUNTRIES UNANIMOUSLY SUPPORTED THE PILOT PHASE BUT DIFFERED ON THE DEFINITION OF COMPONENTS IN THE PILOT. THE EU COUNTRIES GENERALLY SHOWED MOVEMENT TOWARD THE U.S. POSITION (SUPPORTING A PILOT OPEN TO ALL COUNTRIES, COVERING ALL GREENHOUSE GASES INCLUDING BOTH SOURCES AND SINKS, AND ALLOWING "CREDIT" TO BE TAKEN FOR ACTIONS AT ANY TIME).

THE LANGUAGE COVERING JI IN THE INC REPORT ADOPTED AT THE END OF THE SESSION WAS DISAPPOINTING. THE INC PRODUCED A BRIEF PARAGRAPH WITH LITTLE SUBSTANCE, AND NO FORMAL RECORD SUMMARIZING POSITIONS TAKEN IN THE 43 STATEMENTS THAT WERE MADE.

MR. CHAIRMAN, BEFORE I CONCLUDE, I WOULD LIKE TO OFFER A FEW GENERAL OBSERVATIONS ABOUT THE PROCESS AND OUR FUTURE COURSE INTERNATIONALLY. WHILE PROGRESS AT THIS SESSION WAS NOT -- ON THE SURFACE -- AS PROMISING AS MIGHT HAVE BEEN DESIRED, THE INTERNATIONAL COMMUNITY IS STILL MOVING FORWARD. FOR EXAMPLE, THE ABSENCE OF AGREED CRITERIA ON JOINT IMPLEMENTATION AT THIS SESSION IN NO WAY DIMINISHES THE EXTREMELY POSITIVE FEEDBACK THE UNITED STATES HAS BEEN RECEIVING FOR OUR OWN JI INITIATIVE. I BELIEVE THAT WE ARE WELL POSITIONED TO LEAD ON THIS ASPECT OF THE GLOBAL PROGRAM TO MITIGATE CLIMATE CHANGE, AND, IN FACT, THAT OUR LEADERSHIP WILL BEAR FRUIT IN THE NEAR FUTURE.

FURTHERMORE, TO DATE, FOURTEEN COUNTRIES HAVE SUBMITTED NATIONAL REPORTS AS REQUIRED UNDER THE PROVISIONS OF THE CONVENTION, AND ADDITIONAL SUBMISSIONS ARE EXPECTED PRIOR TO THE FIRST MEETING OF THE CONFERENCE OF THE PARTIES. THE U.S. REPORT, DISTRIBUTED HERE TODAY, WAS ONE OF THESE FOURTEEN. OUR OWN REPORT SETS A HIGH STANDARD WHICH WE MUST CONTINUE TO UPHOLD THROUGH STRONG DOMESTIC ACTION. AND, IN MY VIEW, THE LEVEL OF COMMITMENT DEMONSTRATED BY ALL COUNTRIES IN THE PREPARATION OF THEIR COMMUNICATIONS -- AND OF THE NATIONAL CLIMATE ACTION STRATEGIES THAT UNDERLIE THEM -- PROVIDES ROOM FOR CONSIDERABLE OPTIMISM ABOUT THE FUTURE OF THE CONVENTION.

FINALLY, THE BROAD AGREEMENT AMONG OECD COUNTRIES ON THE NEED TO MOVE FORWARD WITH NEXT STEPS IS HEARTENING. WHILE THE EXACT COURSE OF ACTION IS STILL A MATTER FOR DELIBERATION (AND THE U.S. POSITION IS STILL BEING DISCUSSED WITHIN THE ADMINISTRATION), I BELIEVE THAT WE CAN -- AND MUST -- CONTINUE OUR PROGRESS ON THIS ISSUE.

THANK YOU, MR. CHAIRMAN. I WOULD BE PLEASED TO ANSWER ANY QUESTIONS YOU MIGHT HAVE ON THESE MATTERS.

Mr. SHARP. Thank you very much, Mr. Pomerance.

Dr. Hausker, we would be pleased to hear from you now.

STATEMENT OF KARL HAUSKER

Mr. HAUSKER. Thank you, Mr. Chairman.

I would like to begin by echoing my colleague's remarks thanking you for your leadership on a broad variety of energy and environmental issues, particularly the climate issue. The list is very long. I remember in particular your leadership during Energy Policy Act of 1992 on various climate-related provisions of that bill and recently you hosted a Green Lights recruiting meeting back in your home district, a little less than a year ago.

You spoke at the White House Conference on Global Climate Change last April, and everyone at EPA is very appreciative of this, and we hope that we will have some ongoing working relationship with you in whatever your new endeavors are. I am going to focus on the implementation of the President's Climate Change Action Plan.

You have heard a good review of the IPCC science and of where the treaty negotiations stand, but let me first highlight one activity that has a linkage to the IPCC report, and that is some of EPA's sponsored research on the economic impacts of climate change. These run a whole gamut of studies, from the impact on agriculture, forests, sea level rise, human health effects, air quality effects, distributional impacts, and many of these are under peer review right now.

But it is worth noting that when you look, for example, just at a small number of recreational benefits that could be lost due to the effect on ecosystems, you can easily estimate numbers ranging from the hundreds of millions to tens of billions of dollars of costs to our economy, and that should be kept in mind as we balance our policies in addressing this risk. With that, let me turn to the implementation of the Action Plan.

To review for a moment, on Earth Day in 1993 the President announced a commitment to return U.S. greenhouse gas emissions to their 1990 levels by the year 2000, and then to continue these reductions beyond that time. In October 1993, he released the Climate Change Action Plan to implement that commitment. The program is comprehensive, it includes 50 specific programs addressing greenhouse gas emissions from all regions and all sectors of the U.S. economy.

EPA has major responsibilities for about half of the emission reductions under the plan. We are working closely with other Federal agencies to ensure efficiency and effectiveness in this cross-agency effort.

The program has been developed and is being implemented with extensive public input. And because many of the aspects of the projections and estimates used in the process are uncertain, there is a strong emphasis on monitoring and evaluation of the program as it is implemented.

We also recognize that we need to be flexible and to adapt programs to ensure that the complete plan meets its ultimate goals. A key principle which underlies almost all of the Action Plan elements is the concept of cost-effective reductions through partnerships between industry and government.

We have taken this approach because existing economic markets are complex and contain many distortions and barriers. While there are significant Federal budget outlays required for implementation of the plan, about $1.9 billion over 7 years, the total costs are likely to be far less than would be required if we had gone a traditional pollution control-abatement route.

We believe that investing Federal funds in programs which provide information, technical assistance and incentives, such as public recognition, can identify and encourage action on a number of win-win opportunities. With this modest Federal assistance, private actors can identify and carry out investments which in aggregate reduce emissions substantially and more than pay for themselves.

Let me give you a quick status report on some of the key EPA programs. The Green Lights Program, which you are familiar with, has added over 350 new participants since the announcement of the Action Plan.

We now have over 1,500 participants total. Projects already completed under this program have made significant reductions, not only in carbon dioxide, but in other criteria air pollutants. At the same time, our participants have reduced their electricity for lighting by an average of 46 percent, and are saving millions of dollars each year.

EPA's Energy Star Buildings Program is going to build on the success of Green Lights. It is done in conjunction with DOE's Rebuild America Program and will be targeting efficiency improvements in all building systems.

Expanded outreach programs are also being launched to reduce methane losses from gas transmission and distribution lines as well as from coal mines. The Natural Gas Star Program has expanded to include over 30 corporate partners, representing 50 percent of the transmission company pipeline miles, 20 percent of distribution company pipeline miles, and 30 percent of all service connections. In addition, we are working closely with DOE to build public and private partnerships to reduce methane emissions from coal mines.

On another front, EPA is spearheading several key efforts to enhance waste reduction and recycling programs. The response of the business community to the Waste Wise Program has far exceeded our initial goals. We are very encouraged by this.

This program encourages voluntary source reduction, recycling of business waste, and the purchase of recycled products. Over 300 companies have signed up to date, and over 750 waste reduction programs are underway.

The Climate Wise Program, again, one that we carry out jointly with DOE, is designed to stimulate emission reductions across all sectors of the economy. We have signed up a number of companies to engage in—to set performance goals on greenhouse gasses and look within their companies on where they can reduce emissions, and the companies we have signed up so far represent 3 percent of total industrial energy use. These companies have pledged to reduce emissions by 10 million tons of carbon equivalent.

On the transportation front, EPA's Mobility Partners Program is helping States, cities, and private companies provide new and cleaner transportation choices beyond the single-occupancy vehicle. This program encourages environmentally sound and efficient transportation options, such as telecommuting, small-scale mass transit, and car pooling. The program also promotes incentives such as parking cash-out, which can encourage alternatives to the single-occupancy vehicle.

EPA's State and local outreach programs makes the State and local governments full partners in implementing the Action Plan. We have signed up 8 States to produce greenhouse gas inventories at the State level, 16 more are going to do this in fiscal year 1995, 7 States are working on their own internal climate strategies, and 13 are assessing climate impacts, such as sea level rise or are demonstrating innovative mitigation projects such as telecommuting.

Again, this reflects the administration's philosophy that we have to engage all levels of government and all levels of business in a broad ground-up strategy to attack this problem. We have about 20 cities involved in municipal greenhouse gas projects, such as the Urban CO_2 Reduction Project, Cool Communities, Cities for Climate Protection, and the Green Fleets Program. These programs reduce greenhouse gas emissions from public sector activities in transportation, buildings, recycling, tree planting, and procurement of energy efficient equipment.

Let me turn now to our efforts to build capacity in other countries to address climate change.

In addition to demonstrating leadership by taking action to reduce our emissions, we are taking a number of actions to assist in the development of capacity in developing and transition countries. And this, of course, dovetails with the joint implementation provisions of the treaty that Mr. Pomerance was referring to.

The U.S. Country Studies Program is an interagency effort involving 12 U.S. agencies. It was developed as part of the government's commitments under the Framework Convention on Climate Change.

This program is receiving lots of international recognition and acclaim. In it the United States is providing technical and financial support for climate change studies by developing countries and countries with economies in transition.

During the negotiations, many of the countries receiving U.S. support have publicly praised the program as a model of effective capacity building. The program aims to enhance countries' capabilities to inventory their net emissions of greenhouse gasses, assess their vulnerability to climate change impacts, and evaluate the options for mitigating and adapting to climate change.

Over 50 countries are participating in this program, and many have asked for assistance in preparing their national plans under the treaty. I believe the goodwill generated by this program will pay real dividends and increase international cooperation in the future.

The Action Plan also established the U.S. Initiative on Joint Implementation, to encourage the development of cooperative projects to reduce or sequester greenhouse gas emissions and help formulate domestic and international criteria for joint implementation.

The State Department issued final ground rules for this initiative last spring, and the EPA and DOE are comanagers of this program.

So far, we have established an evaluation panel for projects, established a secretariat to provide staff and technical support to the evaluation panel, developed guidelines for project proposals and held a workshop recently to discuss these guidelines with over 150 prospective participants.

Finally, we initiated a first round solicitation and selection process which we hope to conclude by January of 1995. It is worth noting that last week the U.S. signed a Statement of Intent on Joint Implementation with Costa Rica. This agreement not only paves the way for JI projects between the two countries, but also serves as a model for similar bilateral agreements.

Again, I think this illustrates that the United States is moving aggressively on both the domestic and the international front, recognizing that we have to move simultaneously on those fronts, and actions in one sphere alone cannot solve this problem.

Let me conclude by saying that the administration takes very seriously the risks of climate change and its national commitments to take actions under the Framework Convention. The recent information from the scientific community underscores the serious risks, the uncertainties, and the need for prudent action.

While this is a global problem which requires an international solution, the United States must play a leadership role if such a solution is to be achieved. EPA is working to carry out its assigned responsibilities under the Action Plan in ways which will enhance our international competitiveness and lay the groundwork for broader international responses in the future. We believe that the Climate Change Action Plan provides a sound foundation for achieving all these goals.

Thank you very much, and we will be ready to answer any questions.

[The prepared statement of Karl A. Hausker follows:]

TESTIMONY OF KARL A. HAUSKER DEPUTY ASSISTANT ADMINISTRATOR OFFICE OF POLICY PLANNING AND EVALUATION U.S. ENVIRONMENTAL PROTECTION AGENCY

Thank you for the opportunity to discuss the U.S. Environmental Protection Agency's (EPA's) recent activities on climate change, and in particular, let me thank you for your leadership and the strong support you have given the Administration over the past year. I will devote most of my remarks to the status of the Agency's activities on implementation of the President's Climate Change Action Plan. It is important to note that the rationale for these activities is as timely today as when the President announced his Plan. I refer to the fact that the Intergovernmental Panel on Climate Change (IPCC), Scientific Assessment Working Group, has recently approved a new report which updates the state of scientific knowledge about climate change, particularly the carbon cycle, and reinforces the need for action to reduce the risks. The report is the result of a major effort by a large number of scientists worldwide, and has been revised based on comments from hundreds of reviewers. U.S. scientists have played a key role in the process, and I am sure the Subcommittee will receive much more detail from Dr. Robert Watson of the President's Office of Science and Technology Policy on this process and the technical results. My own comments are on the policy implications.

Most importantly, from a policy perspective, the report reaffirms the principal findings of the original 1990 IPCC Science Assessment. It finds that, if recent trends in greenhouse gas emissions continue, the atmospheric concentrations will reach double pre-industrial levels early in the next century, which implies a commitment to warming the lower atmosphere of the Earth by between 1.5 and 4.5 degrees C. In addition, the report examined a number of the complexities of the climate system which have been sources of uncertainty. New information is provided on the role of atmospheric aerosols and stratospheric ozone, the terrestrial biospheric sinks of carbon, and the influence of natural event such as the Mt. Pinatubo volcano. All of these reflect improvements in scientific understanding and clearly demonstrate that the scientific community is moving effectively toward greater understanding of climate systems and climate change.

An important new contribution of the report illustrates the possible penalties of delaying action to reduce emissions. A range of carbon cycle models were run to evaluate effects of possible emissions trajectories for the future. These results show that stabilizing atmospheric carbon dioxide concentrations at any level up to twice today's level (more than three times pre-industrial levels) will require that emissions ultimately be reduced below current global emission levels, though these reductions may be carried out over many decades. Second, the modeling results show clearly the cumulative nature of the problem for long-lived gases like CO_2. Not only will very sharp reductions below baseline projections of carbon dioxide (and other long-lived GHGs) ultimately be needed, but the more we allow emissions to rise in the near term, the more severe the reductions will need to be later.

This information reinforces the need to pursue the Action Plan initiatives, particularly when coupled with other emerging information on ecological effects. Recent studies have provided insights into the potential economic and environmental effects of climate change on the scale discussed in the IPCC report. New information suggests that the rate of global warming may be a very important factor affecting both natural and managed systems. The faster the warming, the harder it will be to adapt, and the ultimate effects of failure to adapt could last for centuries and would be virtually irreversible. Moreover, all of the physical impacts of climate change have potentially significant economic and social welfare implications. For example, a forthcoming study by EPA of the impacts of climate change on recreational fishing (a "non-market" impact) suggests that there are potentially very significant effects on recreational fish habitats. The resulting change in fish populations and consequent impact on recreational fishing could have substantial economic impact.

Hence, it is clear from the magnitude of necessary emission reductions that a global response is ultimately required. We expect that this response will be achieved through a step by-step process. This is why the Administration is committed to working through the Framework Convention on Climate Change to strengthen the existing international agreements, including development of a new aim, and examination of opportunities for common measures. This is why we are supporting more than 50 countries through our Country Studies program to identify options that can be undertaken to mitigate and adapt, and this is why the U.S. Initiative on Joint Implementation is included in the President's Climate Change Action Plan. I will say more about these international activities in a few minutes. However, the most important first step toward global cooperation is for the U.S. to show leadership by making a significant impact on our own emissions, and the President's Action Plan is designed to do that.

The President's Climate Change Action Plan

Domestic Emissions Reduction Programs

First, it is useful to review some of the broad concepts behind the program. On Earth Day, in April 1993, the President announced a commitment to return greenhouse gas emissions (GHG) of the United States to their 1990 levels by the year 2000 and to continue these reductions beyond that time. In October 1993, he released the Climate Change Action Plan to implement that commitment.

The program is comprehensive including almost 50 specific programs addressing the pervasive nature of greenhouse gas emissions from all regions and economic sectors of the U.S. economy. EPA has major responsibilities for about half of the emissions reductions under the Plan. We are working closely with other Federal government agencies to ensure efficiency and effectiveness. The program has been developed and is being implemented with extensive public input, and because many aspects of the projections and estimates used in the process are uncertain, there will be a strong emphasis on monitoring and evaluation of the program as it is implemented. We also recognize that we may need to be flexible and to adapt programs to ensure that the complete Plan meets its ultimate goals.

A key principle which underlies almost all of the Action Plan elements is the concept of cost-effective emissions reductions through partnerships between industry and government. We have taken this approach because existing economic markets are complicated and contain many distortions and barriers. While there are significant Federal budget outlays (estimated at roughly $1.9 billion between 1994 and 2000 to fully fund the actions in the Plan) required for implementation of most of the Action Plan programs, the total costs are likely to be far less than would be required from traditional pollution control programs.

We believe that investing Federal funds in programs which provide information, technical assistance, and incentives such as public recognition, can identify and encourage action on a large number of "win-win" opportunities. With modest assistance, private actors can identify and carry out investments which in aggregate reduce GHG emissions substantially, and save significantly more than their investment costs over the life cycles of the investments. EPA will spend more than $800 million between 1994 and 2000 to implement its responsibilities under the Plan, assuming Congress fully funds each year's budget request. Also, EPA has served as a catalyst for a number of partnerships, such as the Super Efficient Refrigerator Project (SERP), which join innovative energy-efficient technologies and market opportunities, using economic incentive mechanisms to actually create new and profitable markets.

Now, I would like to give you some specifics on programs which EPA's Office of Air and Radiation and Office of Policy Planning and Evaluation, along with other offices, spearhead to implement the concept of voluntary partnerships:

- The Green Lights program, since October 1993, has added 361 new participants (for a total of over 1550). Projects already completed under this program have made significant reductions in CO_2, SO_2, and NO_x. Additional planned projects will continue and accelerate these reductions. At the same time, participants have reduced electricity bills by an average of 46% and saved a total of $40.5 million per year on electric bills.

- EPA's Energy Star Buildings program, which is operated in coordination with the Department of Energy's Rebuild America program, expands upon the Green Lights program, targeting efficiency improvements in all building systems. 25 Energy Star Buildings partners have been enrolled as charter participants, and are expecting to achieve 40% reductions in energy consumption through accelerated upgrades.

- The Energy Star Computer program works closely with more than 300 computer, monitor and printer manufacturers, representing more than 80% of US sales. As a result, over 2000 products are available which have been certified as complying with Energy Star requirements.

- Expanded outreach programs are being launched to reduce methane losses from gas transmission and distribution lines as well as coal mines. The Natural Gas Star program has expanded to include over 30 corporate partners, representing over 50% of the transmission company pipeline miles, 20% of distribution company pipeline miles, and 30% of all service connections. Over the next three years, we expect that this will increase to include over 75% of pipelines. EPA is working closely with DOE to build public and private partnerships to reduce methane emissions from coal mines.

- EPA is spearheading several key efforts to enhance waste reduction and recycling programs. Corporate response to Waste Wi$e, which encourages voluntary source reduction and recycling of business waste, has far exceeded EPA's initial goals. Over three hundred companies have signed on to date. Over 750 waste reduction programs are underway.

- The Climate Wise program, carried out jointly with DOE, is designed to stimulate emission reduction actions across all sectors of the economy. Climate Wise companies now represent over 3% of U.S. industrial energy use and have pledged to reduce emissions by 10 million tons carbon equivalent.

- EPA's Mobility Partners program is helping states, cities and private companies provide new and cleaner mobility choices beyond the single occupancy vehicle. The program encourages environmentally sound and economically efficient transportation options such as telecommuting, small scale mass transit in suburban communities and carpooling. The program also promotes incentives such as parking cash out, which can encourage alternatives. For example, companies which have offered parking cash-outs have reduced the number of cars driven to work by an average of 20%.

- EPA's State and Local Outreach Program makes state and local governments full partners in implementing the Action Plan. Eight states have produced greenhouse gas inventories, sixteen more will prepare inventories in FY95, seven are working on state climate strategies, and thirteen are assessing climate impacts such as sea level rise, or are demonstrating innovative mitigation projects such as telecommuting. Nearly twenty cities are involved in municipal greenhouse gas projects such as Urban Carbon Dioxide Reduction, Cool Communities, Cities for Climate Protection and Green Fleets (Programs to reduce greenhouse gas emissions from public sector activities in transportation, buildings, recycling, tree planting and procurement of energy efficient equipment). States and localities are also partners in several initiatives including Green Lights, Energy Star Buildings, Waste Wise, Climate Wise. We are also working with many municipalities to encourage unit pricing for waste collection programs, creating an incentive for citizens to reduce, reuse and recycle waste.

International Capacity Building

In addition to demonstrating leadership by taking action to reduce our own emissions by the year 2000, we are taking a number of actions to assist in the development of capacity in developing and transition countries.

The U.S. Country Studies Program, an interagency effort, involving twelve U.S. Government agencies, developed as part of the U.S. Government's commitments to the Framework Convention on Climate Change (FCCC), is receiving international recognition. Through this program, the U.S. is providing technical and financial support for climate change studies by developing countries and countries with economies in transition. During the negotiations, many of the countries receiving U.S. support have publicly praised the program as a model of effective capacity building. The program aims to enhance countries' capabilities to inventory their net emissions of greenhouse gases, assess their vulnerability to climate change impacts and evaluate the options for mitigating and adapting to climate change. Over fifty countries are participating in the program, and many have asked for assistance in preparing their national plans. I believe the good will generated by this program will pay real dividends in increased international cooperation in the future.

The Administration established the U.S. Initiative on Joint Implementation (JI) to encourage the development of cooperative projects to reduce or sequester greenhouse gas emissions and thereby contribute to the formulation of domestic and international criteria for joint implementation. Since the Department of State issued Final Groundrules last spring EPA and DOE, as co-managers of the program, have:

- Established an Evaluation Panel, co-chaired by EPA and DOE, with representatives from State, Commerce, USDA, USAID, Treasury and Interior;

- Established a Secretariat to provide staff and technical support to the Panel;
- Developed guidelines for project proposals and held a workshop on September 21 to discuss them with over 150 prospective participants; and,
- Initiated a first round solicitation and selection process, which we hope to conclude by January, 1995.

Also of note is the recent signing of a Statement of Intent on Joint Implementation between the governments of the United States and Costa Rica. This agreement not only paves the way for JI projects between the two countries but also serves as a model for similar bilateral agreements.

Conclusion

The Administration takes very seriously the risks of climate change, and its national commitments to take actions under the Framework Convention on Climate Change. The recent information from the scientific community underscores the serious risks, the uncertainties, and the inherent need for prudent action. This is a global problem which requires an international solution, but the U.S. must play a leadership role if such a solution is to be achieved. EPA is working to carry out its assigned responsibilities under the Action Plan, in ways which will also enhance our international competitiveness and lay the groundwork for broader international response in the future. We believe that the Climate Change Action Plan provides a sound foundation for achieving all of these goals.

We welcome Congressional feedback which will enable us to improve the implementation of existing programs and to evaluate and redesign programs in the future. This concludes my prepared testimony. I would be happy to answer any questions that you may have.

Mr. SHARP. Thank you very much.

Dr. Hausker, let me say to you and to others in some of the other departments, that I think it is extremely important what you are doing in trying to enlist multi-levels of government and industry, and that reaching out is hard work and that it is not always as dramatic and it is not always easy to articulate as a policy the improvements that are there. But it is an enormously educational process that leads to change, and there are real actions occurring. And we can argue over the adequacy of that at any given moment, but it is an extremely important initiative.

And I think it is a role the government can play in today's climate where people are so suspicious of investment of public dollars or suspicious of any regulatory activity, that is a leadership role the government can play to get action. And it is not an easy one to accomplish. And it, therefore, requires that daily grinding work of making it happen. Many of us respect the work that you and others do in making that happen, both at EPA and at the Department of Energy.

I can't resist, you were talking about the natural gas pipelines trying to reduce methane leakage from the natural gas system, and I noticed just quickly in your figures, that you seem to have the interstate pipelines signed up and some local distributing companies. But my suspicion is just from our work on pipeline safety, is that the real leakage in the United States is in the old local systems, at the local level, which are probably hard to get at, but I will leave that to you folks to worry. That is one small aspect of what you are doing.

But in our country, I think that is—it may even be the case in the Soviet Union, I was under the impression their transmission system, the long line thing was a serious problem, but I have been told that may not be nearly the problem, as it is, it is almost similar here, though worse there, that it is in the distributing systems where the real leakage occurs. Which the impression I have is it could be very substantial in the former Soviet Union, but it is rather significant in some of our local systems here.

I think as you may recall several years ago on the natural gas hearing, that I think in one local system in a southern State, that as much as 10 percent was being lost in the local level, and they had no idea where it was going, and what was happening to it, but this other can be significant.

But let me turn, I wanted to ask, Mr. Pomerance, if I might, on your second goal or for the coming negotiations, it was to examine opportunities for common actions, and I wasn't clear what you mean by that, what you have in mind, as opposed to national goal actions instead of internal actions?

Mr. POMERANCE. Well, I think what we have in mind is that, to date, commitments through the year 2000 focus on the aim, that is, there has been much more discussion in the convention of goals, aims, targets and timetables. They all vary in their legal aspects and so on, but generally focus on hitting a specific emission target. However, that has not been coupled with a sufficient discussion of how you actually meet the aim. I mean, to discuss the target without discussing the measure creates almost a disconnect because you have to—governments really have to know, have a very good idea of how they would comply with such a target.

So, if emission goals are set, you want to have a better idea of how governments anticipate meeting them. To the extent that the measures that are taken are spelled out, you have a better sense of that. I think we also spelled out an idea of a menu in which you might agree to a range of measures, and governments might not necessarily have to agree to every one of those, but they would agree that this is a common list from which some portion of efforts to meet the new aim is drawn, that is, these measures would—or a selection of the measures would comprise a part of the program to achieve the aim.

So a lot of the discussion on how to move forward on the next step is focused not just on overall emission goals but on the approach—actually a discussion of measures. Many governments have said we need to talk about measures, so this is one way to approach it without necessarily requiring that governments agree to a certain set of measures at this stage. One possibility is a menu.

Mr. SHARP. I think, obviously, it is extremely important in your negotiations and other policy discussions to focus on it because it strikes me that this is a significantly new effort by the international community to work in this manner of setting national goals and trying to do something in an area that is horrendously ambiguous, very difficult to measure, even in the high-documented societies, the developed societies, it is hard to measure, let alone in those which that is not the case, I guess, in those, because there are fewer entities that have to be measured. But it strikes me that there is the high risk that we have a paper system, a legal system that sets goals that defines, that has reports, but the reality of what is going on has no relationship to what the commitments are or what even the claimed documentation becomes. As I used the example before, it is a little bit like the United States winning the war in Vietnam by the body count. We had a body count that suggested that most of the Vietcong had been killed after a few years, and yet somehow we seemed to be losing the war. And the reason for that was because the measuring system, of course, was not a realistic one.

There were other problems, but then the measuring system didn't tell what was going on. And I think here where you have international governments, that this is not their only goal, in fact, for most of them, this is quite a secondary or tertiary way-down-the-list goal, given struggles to stay in power and to keep down violence and to feed people, even in the developed nations, that it will be difficult to get people on this.

The reason I raise this is because your common action thing plays into a theme that I articulated to the Secretary this morning. And it may be naive, but it is my sense that there needs to be on a parallel track a real emphasis on trying to get, at least within the United States, but I think it would be much better if it were internationally, a consensus on four or five major things to get done. Because it may well be that we would have more impact over the next 10 years by focusing on coal burning in China alone than all the energy and effort that will go into trying to get everybody else around the world to marginally try to do something.

So my point being that U.S. policy, when it is at the World Bank, or when it is in its own AID program, or when it is in its bilateral negotiations, or when it is in the international conference on whatever it is, is in an advocacy position to say we worry about coal burning in China, whether they are super-efficient instead of taking the old technology.

These are things I know our government is working on, I know other governments are working on, but my point being that maybe we miss a boat if we don't get a coordination on the forest issues, on the—and the reason I think it needs to be stated sort of in a very formalistic way, both at home and abroad, is so that people can go back and articulate those goals over and over.

Now, I know those kind of things are going on. But I guess I feel like that there is a high risk to the national goals system which is wonderful in the sense of educating people, engaging them, getting this move forward, but I am suspicious that the developed countries are going to fall short very quickly of the goals already agreed to, and the developing countries will quickly lose an incentive if there is one for them, unless they are the islands on this issue, so that we will have the disconnect you fear in a big way. When if we coordinate resources, we might get a lot more international bang for our buck, if we can get, and I know that is difficult to do, half a dozen things.

Maybe we really ought to be focusing on the biggest way on the former Soviet Union's gas distribution system and the Chinese coal system and the tropical forests, as these are, in fact, parallel to this treaty. Those are our main goals, if that makes sense. I am not saying those are the ones we do. I am just articulating a way of approaching.

I will give you a chance to respond, you don't have to debate it.

Mr. POMERANCE. The overall strategic comment that you are making is what are the highest-leveraged activities, where is it that we can move things the most, with the least investment? That is, what is most cost-effective, and where are those opportunities?

A second thing on this issue that I think you may have been getting at is the question of goals and measures in the relationship, and how countries meet these goals. There is the issue, the long-term issue, we have said that, of an aim for this period. But as we develop aims for the future, we have to both, in a sense, stretch governments to meet those aims to move ahead, but also make them credible so that the convention itself has credibility, that the goals aren't set in the absence of reality.

One area which I think we identified in our position in Geneva in August, and that is potentially one of these common actions where I think that all the economic analysis is identified—and which I think is very much related to what Bob Watson was talking about—is in the area of technology. To the extent that there are cheap, benign substitutes available, the costs of dealing with the issues drop dramatically, so that to the extent that we believe that we can move forward at a lower price, more things are possible. So we have very high leverage.

Let me return to your suggested sort of a strategic plan—that we pick four or five things.

An example, of course, relates to China because the Chinese have huge coal reserves, however it is very difficult to focus on a single country. The Chinese can sort of say, well, you there in the United States, your emissions aren't exactly small, what are you so worried about, depending on what the implications for China would be. But I think one of the reasons we have moved aggressively forward with joint implementation is our common belief that that joint implementation offers a mechanism for moving capital in a highly efficient, cost-effective way.

Mr. SHARP. Well, I am glad to hear you say moving forward aggressively on joint implementation. I think that is imperative. I know it can look like it is only our national interest being served, but I think the reality is, it is a way, another incentive to get capital technology information transferred and more of these leaders in other countries are recognizing it is in their interests to receive that, too.

We only have about 5 more minutes. I wondered if I might ask—we have a vote on the House Floor.

Mr. Watson, I don't know if you could outline, you summarized so well and articulately where we are and what you folks have most recently come forth with, can you give us any picture over the next 5 years of sort of the main issues that we might see some improvement in the learning curve on as a result of scientific studies that are underway?

Mr. WATSON. Yes, I think a couple of issues. One, we have recognized the importance of aerosols in affecting the heat trapping of the earth's atmosphere. I think within the next 2 to 3 years, we will see far more people trying to understand the exact implications of those aerosols and partially offsetting the implications of greenhouse gasses. So I think we will see a large improvement in general circulation models, both in how well they can predict the magnitude, timing, and regional patterns of climate change, but in particular, trying to quantify what the real implications of these aerosols are in the earth's atmosphere.

The point that we have to remember is that while aerosols may be somewhat offsetting the effect of greenhouse gases, the lifetime of these aerosols is only days or weeks in gases such as sulfur dioxide, whereas the lifetime of CO_2 is 100 or more years. Therefore, if one ends up with a strategy later on of reducing emissions of SO_2, suddenly any of this offset of these short-lived gasses will completely disappear, but we will still be left with the very long-lived gasses such as carbon dioxide which shall affect our system for the next 100 years.

I see a significant improvement by understanding the role of clouds, that affecting the magnitude of climate change, understanding the role of the oceans and the way the oceans and atmosphere play off one against the other, that will affect the timing and some of the regional patterns of climate change. And I think putting these together, hopefully, we will end up with much better predictions of climate change.

We have to put far more effort and understanding into the socioeconomic dimensions of climate change, what are the driving forces for change and how will societies respond to change?

One particular area will be evaluation of ecological resources, it is going to be a major issue for loss of biological diversity under that convention. We don't yet know how to best value ecological resources in nonmarket terms, so more work in that direction. And we must do a much better job of looking at the vulnerability of ecological and socioeconomic sectors, whether they be agriculture, forestry or fisheries; two, climate change, we have to understand are they sensitive to the absolute magnitude of climate change, the rates of climate change or a change in extreme events, so we have to couple what do we know about the physical system, therefore better predictions of climate change at the global and regional level. We have to couple those in with what do we know about ecological systems and socioeconomic systems, and how will they respond and how will societies drive change and respond to change?

Mr. SHARP. We thank you very much.

I would like to pursue this more. I have a vote on the House Floor at the moment and at least one of our witnesses needs to get away, so I think we will close this out at this point. But I certainly appreciate your time and attention to the matter, and we will make any additional comments a part of the record as needs to be.

Thank you very much.

[Brief recess.]

Mr. SHARP. The subcommittee will come to order.

The Chair apologizes for the lengthy delay.

We are very pleased now to have with us Dr. Daniel Lashoff, senior scientist with the Natural Resources Defense Council; Mr. Dale Heydlauff, vice president for Environmental Affairs for the American Electric Power Service Corporation, representing the Edison Electric Institute; Governor Tony Earl, the chairman of the Center for Clean Air Policy; and Mr. John Hemphill, executive director of the Business Council for a Sustainable Energy Future.

Gentlemen, I think you are probably familiar with our processes. We will be happy to make your written statements a part of our record and will be glad to hear your oral testimony at this point.

Dr. Lashoff, we will start with you.

STATEMENTS OF DANIEL A. LASHOFF, SENIOR SCIENTIST, NATURAL RESOURCES DEFENSE COUNCIL; DALE E. HEYDLAUFF, ON BEHALF OF THE EDISON ELECTRIC INSTITUTE; GOVERNOR TONY EARL, CHAIR, CENTER FOR CLEAN AIR POLICY; AND JOHN HEMPHILL, EXECUTIVE DIRECTOR, BUSINESS COUNCIL FOR A SUSTAINABLE ENERGY FUTURE

Mr. LASHOFF. Thank you, Mr. Chairman.

I would like to start by adding my appreciation to your leadership over the years on rational energy policy issues in general, and the consideration of the global climate change issue in particular. You really have been a true public servant in this Congress which has received much malignment in recent days, and you will be definitely missed, not only by me, I am sure, but by all the colleagues here. So I just want to express my appreciation as others have before today.

Let me just pick up a couple of highlights from my testimony. This morning you suggested, I think, what could be termed a very cautious approach to adopting additional commitment under the climate treaty.

I think that the conclusions from the IPCC, reviewed in very rapid fashion, as usual, with Dr. Watson, suggest that we have to take a more aggressive approach. There is a real danger of a chicken and egg situation.

We know, as Mr. Pomerance said, that current commitments are not adequate to achieve the goals of the convention, and they are not binding. And if we are worried about other countries meeting their obligations or doing their fair share, it seems to me that the United States ought to be pushing aggressively for real binding commitments so that there is something solid we can hold other countries to. Because in the current situation, everybody is sort of saying, well, we are not sure you are going to do it, so we are not sure how aggressive we are going to be. And, in fact, very little is getting done, not that nothing is getting done, but not enough.

The conclusions at IPCC make it quite clear that if we are to stabilize the concentrations of greenhouse gasses in the atmosphere at a "nondangerous level" as called for in the treaty, we have to commit to real emission reductions substantially below 1990 levels, and we don't have a lot of time to waste in doing that.

Let me touch briefly on the question of developing countries in joint implementation that was discussed quite a bit previously. We heard a lot about emissions from India and China. I think it is important to keep those emissions in perspective.

It is still the case that the industrialized countries, both OECD, plus the former Soviet Union, are responsible for a substantial majority of global emissions, somewhere between two-thirds and three-quarters, depending on how you do the counting and what year you look at.

It is also important to remember that per capita emissions in the United States are almost 10 times those of China and more than 20 times those in India, so while there has been a lot of focus on the rate of growth in developing countries, which is important, we can't lose sight of the absolute numbers where the dominant emissions are still from industrialized countries.

Now having said that, I strongly support the Secretary's Sustainable Energy Trade Missions and believe they have a lot to contribute and that we can and should do much more to promote sustainable energy use in developing countries, but what about joint implementation as the mechanism for doing that? I don't believe that joint implementation can or should be the only approach, even the main approach to promoting sustainable energy use in developing countries.

It does have the potential to contribute, but that potential won't be realized if it is undermined by bogus credits. I know that you and many of your colleagues are strong believers in joint implementation, but unless the system has integrity, it will not create the kinds of incentives that are needed for responsible companies to undertake real reductions abroad. And let's be frank about it, the private sector has every incentive if they can get away with it, to get credits for doing things that they were going to do otherwise.

And if we allow those kinds of credits to enter the system, then any real reduction incentive will be undermined and the net result of joint implementation will simply be that companies will get credit for things that they were going to do otherwise and that would allow emissions in industrialized countries to be higher than they would otherwise be. And that is the reason for the concern about joint implementation that you hear expressed from the environmental community.

Let me now turn briefly to the U.S. Domestic Plan. The Secretary was very upbeat about the prospects of that plan this morning, and as you know, NRDC has supported the plan as being able to make a valuable contribution, but, unfortunately, my job today is to pour some cold water on her optimism. I think, quite frankly, that we are in real trouble with the current plan, that while it will make a difference, it just won't be nearly enough.

If you take a look at Exhibit 3 in my testimony, this figure, it shows U.S. CO_2 emissions since 1985, and I have added in this figure a data point for 1994 drawn from the Climate Action Report that the State Department just released today, a report that was submitted to the treaty parties. That is data based on the short-term energy outlook in calculating the emissions implications.

What you can see is that the emissions for 1994 will be, when the year is completed, based on these projections, significantly above the highest emissions anticipated for any year under the Climate Action Plan, so we have a lot more to do to reduce emissions than we thought we did last October when the plan was released. And at the same time, we are doing less than we thought we were going to do because of the budget shortfall in fiscal year 1995.

As you remember, Secretary O'Leary testified in May that if the budget was cut by more than $150 million for the energy efficiency programs at the Department of Energy, that it would cripple the Climate Program and that emissions would rise dramatically. In fact, when it got out of Congress, the budget was cut by $180 million.

The Secretary seemed to indicate this morning that she felt that some of those shortfalls might be made up from the Climate Challenge Program with utilities which were not scored originally, because it basically is considered double counting what is already in the plan.

Unfortunately, I have to be very skeptical about the prospects for that as well, not because there is not the potential there for utilities to play a very important role, but because the incentives for utilities to do that are being undermined. And, in fact, a threat of retail, whatever the reality would be, the threat of it, where companies don't know whether the incentives to invest in energy efficiency will be maintained, have been freezing efficiency programs around the country, and even the best companies like PG&E which we have worked with for years, has planned to cut its efficiency budget by $100 million this year.

Other companies are clearly converting their so-called energy efficiency program to electricity marketing programs that are going to increase emissions and not decrease them, whatever the actual claims are. So I am again very concerned on that front.

Let me try and touch on the issue beyond the year 2000 where the situation is perhaps even worse. The Climate Action Report for the first time releases the Department or the government's projections for emissions in the year 2010 under current policy, including the Climate Action Plan. And what that shows is that they are projecting, if we don't take additional steps, that emissions in 2010 will be 150 million metric tons above 1990 levels, by their own calculations.

Again, if the Action Plan isn't successful, it will be worse than that. It is interesting to note that about 80 percent of those emission increases compared to 1990 come from the transportation sector, an area where the plan basically does very little, almost nothing in its current version, which underscores the importance of this Federal advisory committee that has just been started up to look at reducing emissions from vehicles. And I am convinced that the only conclusion that the committee can reach is that we will have to put together a package of policies that include substantially higher fuel efficiency standards, plus incentives to continue making progress beyond those standards as well as policies to create incentives to reduce vehicle miles of travel and to encourage low greenhouse gas alternative fuels, not just any alternative fuels, but alternative fuels that can really make a difference.

So in conclusion, the United States currently faces a very serious emissions gap in our policies, and I am quite concerned that unless we act quickly to close that gap, we will also be facing a very serious credibility gap internationally quite soon.

Thank you.

[The prepared statement of Daniel A. Lashoff follows:]

Statement of Daniel A. Lashof, Ph.D., Senior Scientist
Natural Resources Defense Council

I. INTRODUCTION

Thank you Mr. Chairman and members of the Committee. I am Daniel Lashof, a senior scientist with the Natural Resources Defense Council (NRDC). NRDC is a non-profit environmental protection organization, founded in 1970 and supported by 170,000 members. Previously I was an Environmental Scientist at the Environmental Protection Agency, where I was the lead author of the Report to Congress *Policy Options for Stabilizing Global Climate.* I hold a doctorate in Energy and Resources from the University of California, Berkeley, where I specialized in the global carbon cycle. I have had the privilege of appearing before this Committee previously, and I appreciate the opportunity to appear here today.

Before I begin, I would like to personally thank the Chairman for his dedication to the development of rational energy policies in general, and to consideration of the global warming issue in particular. Mr. Chairman, as a Member of this much maligned Congress, you have been a true public servant. You will be sorely missed. We can only hope and expect that you will continue to find ways to serve the public interest.

II. IMPLICATIONS OF RECENT SCIENTIFIC FINDINGS

Mr. Chairman, the recently completed Special Report of the Intergovernmental Panel on Climate Change (IPCC) clearly underscores the task before us. More than 90 countries from around the world have ratified the United Nations Framework Convention on Climate Change, which sets the objective of stabilizing the concentrations of greenhouse gases in the atmosphere at a level that will prevent dangerous interference with the climate system. The IPCC report shows definitively that global carbon dioxide emissions must eventually be reduced to substantially below 1990 levels to achieve this goal. Capping global emissions at 1990 levels would allow concentrations to continue rising indefinitely.

How rapidly emissions will have to be reduced depends on what level of greenhouse gas concentrations is considered "safe." While the currently available IPCC documents do not directly comment on this point, vulnerability assessments on human health, coastal zones, forest ecosystems, and agriculture have been conducted. Some of these studies were recently reviewed at a scientific workshop sponsored by the World Wildlife Fund. One of the conclusions of that workshop is that greenhouse gas concentrations should be stabilized at well below an equivalent doubling of carbon dioxide from preindustrial concentrations in order to make it reasonably likely that dangerous interference with the climate system will be prevented (the workshop statement is in the final stages of production, and will be supplied for the record).

Of the scenarios examined by the IPCC, this implies that we should consider the S450 case in more detail. This scenario shows the emissions trajectory required to stabilize carbon dioxide concentrations at 450 parts per million (ppm), about 90 ppm more than current levels. Combined with effective policies to control methane, HFCs, and other gases, stabilizing CO_2 concentrations at no more than this level might be adequate to achieve the objective of the convention. The results from numerous carbon cycle modeling groups around the world show that achieving stabilization at this level requires that global CO_2 emissions peak at no more than 10-20% above current levels within two decades, after which time they must decline steadily to about one-third of current levels by the end of the next century.

Given the substantial momentum built into current emission trends, and the long lead times required to replace energy producing and consuming capital stocks in an orderly way, this implies that we have no time to loose in adopting aggressive policies to cut emissions. While fossil fuel interests have pointed to the potential for rapid increases in emissions from developing countries, such as India and China, as a reason for the U.S. to avoid adopting emission reduction commitments, the opposite is true. In order to limit and then reverse the growth in global emissions, the U.S. and other industrialized countries must adopt firm commitments to substantially reduce our own emissions.

This is essential for several reasons. First, although relative growth rates are important, industrialized countries still account for the majority of global emissions in absolute terms. Second, per capita emissions in developing countries remain far lower than those in the industrialized world. For example, U.S. per capita CO_2 emissions are almost 10 times those of China and more than 20 times those of India. These countries can only be expected to take the problem of global warming seriously if countries with high per capita emissions demonstrate a commitment to significant emission reductions. Finally, the advanced technology needed to bring emissions down worldwide will only be developed and deployed if industrialized countries take the lead.

III. INADEQUACY OF CURRENT EFFORTS

This review of the scientific context for global warming policy makes it clear that the United States was absolutely right last February when our delegation to the climate negotiations announced that the U.S. considers the current commitments in the Climate Treaty to be inadequate. The current specific commitments in the Treaty only require industrialized countries to aim to return emissions to 1990 levels by the year 2000, and provide little guidance for the period beyond 2000. Even if these commitments were fully implemented, global emissions would continue to increase, rather than decreasing consistent with the objective of the Treaty.

Unfortunately, the United States did not follow up on its statement from February with the kind of leadership the world needs and expects from this country. Instead, the U.S. issued a vague statement in August, calling for negotiations to begin at the First Conference of Parties next March to develop a "new aim" to guide the post-2000 period. The U.S. statement failed to specifying the type of "aim" the U.S. would like to see, a deadline for concluding negotiations, or the types of specific measures the U.S. proposes to facilitate achievement of future emission obligations and the objective of the Convention.

In the meantime, Trinidad and Tobago, on behalf of the Alliance of Small Island States, has proposed a Protocol to the Climate Treaty to be considered at the First Conference of Parties which would establish a specific requirement for all industrialized countries to reduce their emissions to 20% below 1990 levels by 2005. NRDC and many other non-governmental organizations around the world strongly endorse the adoption of a protocol containing such a requirement at the Berlin meeting next March. Germany, the host of the "Climate Summit," has welcomed the protocol proposal and submitted a paper listing key measures that should also be included, such as automobile fuel efficiency requirements equivalent to 47 miles per gallon. The United States should similarly welcome the Alliance of Small Island States proposal, and should elaborate on specific measures that it believes Parties should undertake cooperatively. Some of these measures, such as energy efficiency standards, could usefully apply to all Parties, including developing countries.

It is also important for the U.S. to clarify its position on the related issue of "Joint Implementation." Treaty Parties are moving toward consensus on establishing a pilot phase for joint implementation arrangements in order to gain experience with institutional arrangements and to test procedures for verifying that joint implementation projects generate genuine reductions in global emissions. Such procedures are extremely complex and problematic in the current context in which Treaty Parties do not have binding emission caps. This situation is unlike the sulfur dioxide allowance system, in which trades are conducted under strictly defined overall caps. An attempt to claim any form of emission "credits" during the joint implementation pilot phase would undermine the credibility of the system and damage the prospects for effective international emission reductions in the future.

IV. THE DOMESTIC CLIMATE PROGRAM

For the U.S. to provide credible leadership in Berlin, it must also significantly strengthen its domestic Climate Change Action Plan. NRDC welcomed the introduction of the Climate Plan last year as an important step forward, and we continue to support full funding and aggressive implementation of the measures in the current plan. At the same time, it is now clear that additional measures beyond the current plan will be needed to fulfill U.S. obligations under the Climate Treaty and to achieve President Clinton's commitment to ensure that greenhouse gas emissions do not exceed their 1990 levels in the year 2000. This conclusion is based on the substantial shortfall in appropriated funds for FY'95, recent trends in carbon dioxide emissions and oil prices, and a detailed review of the assumptions underlying the Administration's analysis. Overall, I estimate that the U.S. faces an emissions gap of some 70 million metric tons of carbon equivalent (MMT) between 1990 emission levels and likely year 2000 emissions under the current plan (see Exhibits 1 and 2; and *The Gap: Climate Plan Faces Major Shortfall*, attached for the record).

Much of the emission reductions projected under the Climate Plan depend on voluntary public-private partnerships led by the Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy. While these programs have the potential to achieve significant results in an extremely cost-effective manner, they are not free. Unfortunately, the enacted FY'95 budget for energy efficiency programs falls short of the Administration's request by more than $180 million. In light of Secretary O'Leary's testimony on May 10 that "reductions beyond the $120 million level will make the President's commitment [to return greenhouse gas emissions to 1990 levels by 2000] virtually impossible to meet" and that a cut of more than $150 million would "cripple" the program and cause emissions to "rise dramatically," this shortfall alone clearly implies the need to adopt additional measures to offset the "crippling" of these programs. Although the Environmental Protection Agency's (EPA's) climate programs fared better in the appropriations process this year, I remain concerned about the implications of cuts made in EPA's overall FY'95 operating budget.

Perhaps even more dismaying are reports regarding preliminary budget proposals for FY'96 at both DOE and EPA. It is my understanding that DOE has submitted a proposed FY'96 energy efficiency budget to the Office of Management and Budget that is below the level requested by the Administration for FY'95. If such a budget were to emerge from the Administration it would represent a retreat from the leadership that the President provided in the FY'95 budget, which began to shift energy priority in a manner similar to that called for by the Sharp Resolution (H.Con Res 188), currently endorsed by more than 120 Members of Congress. Similarly, I understand that EPA is proposing to cut its base climate programs in order to give the appearance of funding the Climate Plan in FY'96. These proposals are clearly at odds with the President's Climate Plan, which calls for program expenditure of $1.9 billion through FY'2000.

In addition to the funding gap, the plan faces a substantial baseline gap. The emissions projections for the year 2000 underlying last year's Climate Plan were based on oil price projections that are much higher than current official forecasts. Furthermore, the emission projections were based on unrealistic assumptions that new car fuel economy levels will rise substantially in the absence of any new requirements or incentives. Concern that the baseline emission projections were unrealistically low have been strongly reinforced by recent emission trends. Exhibit 3 shows recent trends in U.S. carbon dioxide emissions from energy consumption. Emissions reached an all-time high of 1373 MMT in 1993, an increase of 32 MMT, or 2.5%, over the previous year. Indeed, 1993 emissions were higher than the emissions projected for 1995 under the Administration's Climate Plan. Furthermore, the Climate Action Report, submitted to the Climate Treaty Parties last month, notes that the most recent Energy Information Administration Short Term Energy Outlook projects energy consumption for 1994 that converts to carbon emissions of 1408 MMT, which is 25 MMT greater than the Climate Plans projected maximum emissions of 1383 MMT in 1997.

This analysis makes it clear that the U.S. must not only aggressively implement existing initiatives, but also that the Administration must propose additional measures in order to meet the President's commitment. Nowhere is this more true than in the transportation sector. When upstream (mostly refinery) emissions are considered, the transportation sector is responsible for 33% of total U.S. greenhouse gas emissions, yet only 7.5% of the emission reductions projected under the Climate Plan for 2000 come from this sector. Even more striking are the projections for 2010, released in the Climate Action Report for the first time. Under the current Climate Plan, emissions are projected to increase to 150 MMT above 1990 levels by 2010. Of this projected growth **more than 80%** is from increases in the transportation sector! Although the Administration recognized this problem in the original Climate Plan, it took almost a year to convene the Federal Advisory Committee which is supposed to make recommendations on policies to reduce greenhouse gas emissions from personal motor vehicles. As a member of that Committee, it is now more clear to me than ever that its work is urgent and vital. It is also clear that should the Advisory Committee fail to reach consensus, the Administration will have no choice but to move forward on its own, as it has committed to do. Only a policy package including substantial increases in fuel efficiency requirements as well as incentives for continued improvements, plus policies to reduced vehicle miles of travel, and to promote low net carbon alternative fuels can achieve the kinds of emission reductions that will be required.

Beyond the transportation sector, NRDC and the American Council for an Energy Efficient Economy have made recommendations for initiatives to more aggressively increase energy efficiency in homes and businesses, as well as to increase aluminum and plastic recycling and to ensure that utilities are given appropriate incentives to pursue energy efficiency and clean generation technologies (See Exhibit 4; and *Bridging the Gap: Initiatives to Achieve President Clinton's Climate Commitment*, attached for the record). The U.S. should announce its intention to move forward with these initiatives by February, when the next preparatory meeting for the Conference of Parties will take place.

V. CONCLUSION

In conclusion, Mr. Chairman, the task before us is clear: Global emissions must be reduced. Current efforts are not adequate to the task; a firm commitment to the next step, a 20% cut in emissions by 2005, should be made at the first Conference of Parties next March. Meanwhile, domestic implementation of the Climate Plan must be strengthened, and new initiatives are needed, particularly to reduce transportation emissions. The U.S. currently faces a significant emissions gap. We must act soon to bolster our emission reduction efforts or we will face a serious credibility gap as well.

EXHIBIT 1. THE EMISSIONS GAP

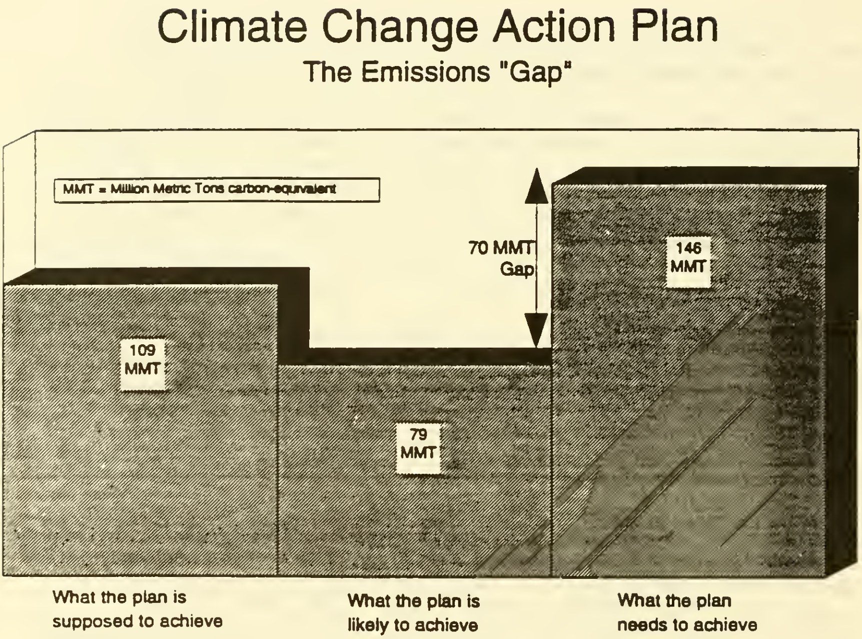


EXHIBIT 2. ELEMENTS OF THE EMISSIONS GAP

REDUCTIONS IN CLIMATE PLAN CREDITS:

Delayed/incomplete plan implementation **20 MMT**

The Climate Plan assumes that implementation begins in FY 1994 and that program impacts ramp up rapidly through FY 2000. The plan is already significantly behind schedule. Requests by both DOE and EPA to reprogram funds in FY 94 to initiate the Climate Plan have been rejected by Congressional Appropriations Committees. Meanwhile, despite strong support from the environmental and energy efficiency community, the prospect of securing full funding of the FY 95 budget request for the Climate Plan appears remote unless the Administration intervenes at the highest levels. Assuming that results in 2000 are at the level projected for 1999 implies a 20 MMT shortfall in emission reductions.

All carbon is not created equal **10 MMT**

The Climate Plan uses projected increases in carbon storage in forests (10 MMT in the plan and 7 MMT in the baseline) to compensate for increases in fossil fuel consumption. These increases appear to be based on very optimistic assumptions, and verifying any additional carbon storage will be difficult if not impossible. In any case, increasing forest carbon stocks can not substitute for reducing fossil fuel consumption. The climate treaty obligates the U.S. to preserve and enhance carbon sinks *in addition* to reducing our emissions. Otherwise, sinks only divert attention from essential reductions in fossil fuel emissions, and could be strictly counter-productive because carbon stored in forests could be returned to the atmosphere at any time due to cutting, dieback, or fire.

ADDITIONS TO THE BASELINE:

Lower world oil prices **16 MMT**

The Administration Baseline assumes that prices rise from their 1992 level of about $18 per barrel, returning to 1990 prices of about $23 per barrel in 2000. Starting in the latter half of 1993, however, world oil prices have fallen significantly. The Administration estimated that emissions would be 16 MMT higher in 2000 if oil prices remained constant at 1992 levels, rather than increasing to $23 per barrel by 2000 as assumed.

Realistic vehicle fuel economy assumptions **14 MMT**

Combined new car and light truck fuel economy in the U.S. has remained essentially constant at 25 miles per gallon (mpg) since 1981 according to EPA ratings. The Administration Baseline nonetheless forecasts substantial increases in new car and light truck fuel economy levels by 2000 in the absence of any new price or policy drivers. Apparently, the fuel economy assumptions were arbitrarily selected to keep overall transportation energy demand at the level forecasted by AEO 93, despite adjusting upward the AEO's forecast of vehicle miles traveled. Adopting the Administration Baseline assumption regarding vehicle miles traveled without allowing unrealistic increases in fuel economy, increases year 2000 vehicle emissions by 5%, or 14 MMT.

All carbon is not created equal **7 MMT**

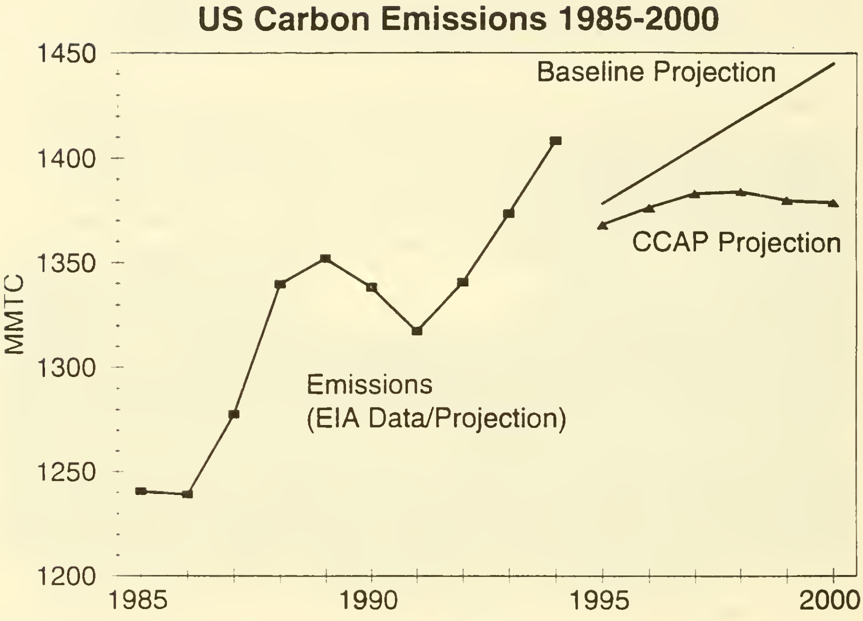
See above.

Base program shortfall **3 MMT**

The Administration Baseline assumes emission reductions of 29 MMT in 2000 from effective implementation of the Energy Policy Act and EPA's Green Lights and Energy Star Buildings programs at a level reflected in the FY 94 budget request. These base programs, however, were cut by about $100 million in FY 94. We conservatively assume that the impact of these base programs will be reduced by at least 10%, or 3 MMT.

TOTAL **70 MMT**

EXHIBIT 3. RECENT TRENDS IN CO_2 EMISSIONS



Sources: CCAP Technical Supplement; EIA Emissions Inventory 1985-1990; EIA Data/ACEEE Calculation; Climate Action Report

EXHIBIT 4. PROPOSED INITIATIVES TO CLOSE THE GAP

	MMTs Reduced	
	2000	2010
1. **Increase Auto Fuel Economy** Substantially increase existing CAFE standards and provide market incentives to achieve new car fuel economy of at least 45 miles per gallon by 2005. Also adopt standards and incentives to reduce tire rolling resistance.	30.6	162
2. **Adopt Pay-at-the-Pump Auto Insurance** Eliminate uninsured motorists and make insurance payments more accurately reflect accident risks by collecting a portion of insurance premiums through gasoline sales.	4.8	19
3. **Upgrade Home Energy Efficiency** Cut energy waste in America's 90 million existing homes by investing in improvements to low-income housing and by informing consumers and giving lenders incentives to promote mortgage financing of efficiency improvements. Also, establish model retrofit standards to apply when existing buildings are sold, and encourage their adoption by state and local governments.	9.2	20
4. **Strengthen Efficiency Standards** Require states to upgrade their building codes for new construction. Adopt additional commercial and industrial equipment efficiency standards.	8.7	43
5. **Reward Efficiency Investments** Require states to adopt regulatory reforms that make utility investments in energy efficiency at least as profitable as those in energy supply and that provide performance incentives for utilities to achieve maximum efficiency gains. Define Integrated Resource Planning, Demand-Side Management, and other energy efficiency measures as "reasonably available control measures" under the Clean Air Act.	13.4	27
6. **Increase Recycling** Adopt minimum recycled content requirements for aluminum and plastic. Create incentives for community investments in source separation and industry investments to expand use of recycled materials.	8.0	20
TOTAL	74.7	290

Mr. SHARP. Thank you very much.

Mr. Heydlauff, happy to hear from you now.

STATEMENT OF DALE E. HEYDLAUFF

Mr. HEYDLAUFF. Thank you, Mr. Chairman.

In addition to my role as the environmental officer of American Electric Power, I also serve as the industry chairman of the Coordinating Committee for the Climate Challenge Program. And I also wanted to indicate that both EEI and AEP are leading members of the Global Climate Coalition, which is the broad-based industry organization following the climate change issue.

I had two purposes today: First, was to give you an update on the Climate Challenge Program since the signing of the Memorandum of Understanding on April 21, which you participated in, and we are very grateful for that. The second are a few comments and concerns on the international policy-making on the climate change issue.

With respect to the Climate Challenge, since the signing ceremony on April 21, we have negotiated a model participation accord which will represent the basic agreement that individual companies will ultimately sign with the Department of Energy. That accord sets forth three primary obligations for a participating company:

The first is that they delineate a type of commitment that they are prepared to make, and those commitments come in one or more of six different forms. The first is to contribute to industry initiatives, and we have five broad-based industry initiatives, one dealing with geothermal heat pumps, one dealing with electric vehicles, one dealing with fluorocarbon management, another dealing with utility investments internationally in energy efficiency programs, and the last being an investment pool that we are creating that would invest in emerging and currently available electrotechnologies and renewable energy resources.

And that fund—they are hoping to attract between 50 and 150 million in capital from participating utilities.

The second form a utility could take would be to agree to reduce emissions below their 1990 levels by the year 2000. The third type of commitment is to reduce emissions to the 1990 level by the year 2000. The fourth is to reduce to some specific level or by a certain amount by the year 2000. The fifth is to reduce or limit emissions to a given emission rate, which is represented by emissions per kilowatt hour, either sold or generated. And the final commitment and the one which it appears 95-plus percent of the participants will agree to, is to undertake a wide range of specific programs or actions that is have the effect of reducing greenhouse gas emissions in the future.

The second overall commitment that a utility makes are obligations that they report annually and that reporting will be done under section 1605(b) Voluntary Reporting Program, probably augmented somewhat by an accounting procedures protocol that we have yet to decide on with the Department of Energy that will probably include more information about specific actions that utilities take.

This is really to address the whole concerns that have been expressed, legitimate concerns, I believe, by the external community that those actions be real, verifiable, transparent. And so we have agreed to try and come up with some understanding about exactly what level of reporting we should do.

The final commitment is to confer at some point in time with the Department about our progress under our participation accord commitment and to discuss possible adjustments to that commitment based on conditions at that time. There is an understanding that those adjustments could go up, as well as down. So that is the participation accord.

The Climate Challenge, as the Secretary mentioned this morning, will have its first signatory companies this month. The Department would like to have additional companies signed up in December, early December.

The bulk, I believe, will sign some time in January. And it is our hope, frankly, to have all of the utilities that are prepared to participate signed up before the next meeting of the INC in February in New York City, and at that time, we are working with the Department of Energy to have some kind of ceremony which will announce the aggregate total of emission reductions associated with the Climate Challenge Program. And frankly, I think it is likely to be considerable.

I don't know if it will be the level that the Secretary speculated on this morning, which is between 10 and the 20 million metric tons of carbon. It could be more. It could be less, translated to CO_2 emissions, which is the way we think more in the industry. And most of the action we take will be geared towards CO_2 emissions, that is between 36.5 and 73 million tons of CO_2, and I think that is a considerable contribution if we are able to achieve those levels.

Three points on international policy-making: First, dealing with adequacy of commitments. I will be frank. The utility industry and I think most of American industry was at once surprised and also baffled when the State Department indicated a week before the Geneva meeting in February that they were going to make a statement on adequacy of commitments. Surprised because they had made that decision absent any input from the public, baffled because it appeared to us to be highly premature to be rendering a verdict as to the adequacy of commitments being made on the Climate Convention.

Why? Number one, national action plans had not been submitted. They were not submitted until September 21st and we haven't had and opportunity to review or assess those plans to determine just exactly what levels of emissions reductions are likely to occur.

Second, the IPCC work, the second assessment that will provide more definitive guidance as to the scientific underpinnings of international policies won't be available until late next year and the policymaker summary on the special report isn't going to be available until later in November.

Finally, it seemed to be an abrogation of the process that had been agreed to initially for reviewing adequacy of commitments and it simply didn't make a lot of sense to us that the U.S. would attempt to circumvent the process that had originally been agreed to.

With respect to JI, we commend the administration for its leadership role, both domestically and international on JI.

As the Secretary indicated this morning, the rate of growth in greenhouse gas emissions in the developing world will far surpass that in the developed world. And I think the opportunities for American industry to play a meaningful and constructive role in assisting those companies—countries in achieving the level of economic prosperity that they desire in economically and environmentally responsible way, is virtually limitless. So we applaud that.

I, frankly, would be remiss if I didn't say that we would like to see a far more open and robust, unfettered JI process, but I recognize and we recognize that it will take time to get to that point, that it takes time to negotiate diplomatic agreements governing the monitoring and verification of emissions reductions from associated projects, as well as to have some understanding about the sharing of benefits from investments made through the JI program.

Finally on JI, the whole additionality criteria that Dr. Lashoff just talked about, is one that I think, in our view, is terribly unfortunate because it is bound to have a chilling effect on industry activities in JI. It does not, in our view, respect the fact that American industry weighs numerous factors in deciding whether or not to invest in technologies internationally, not the least of which is an opportunity to make an attractive rate of return.

If you read the additionality criteria literally, it would suggest that if a firm did not undertake projects purely for the altruistic reason of reducing greenhouse gas emissions, they can't be recognized for those contributions and have appropriate credit accorded to them, and I think that is regrettable.

Finally, no one mentioned today, which I think is unfortunate, a recent episode that occurred in Maastricht at the Netherlands during the last meeting of the IPCC Working Group. One which I think, frankly, casts a pale over the integrity of the IPCC process. You are in receipt of a letter that many Americans of American industry sent to Dr. Watson and Mr. Palmer once on this topic. It, frankly, dealt primarily with the issuance of a press release that characterized the outcome of a meeting prior to that meeting even taking place, reached conclusions on the policymakers' summary that were misleading and factually inaccurate.

I will tell you that the U.S. delegation was not happy about this, either. They registered their protests about it, but they did not do anything to attempt to get that press release retracted or to issue a clarification to the news media about the inaccuracies contained in that press release.

Frankly, I think it represents an abuse of trust by the chairman of the IPCC and the cochairman of the Working Group I, that governments like the United States which is the major funder of the IPCC, simply should not tolerate.

In conclusion, Mr. Chairman, it is normally the practice to summarize one's remarks, hit the key points. I am going to forego that opportunity, and instead I want to convey to you that, in many respects, this is a sad day for industry. It is a sad day because it is probably the last time that a representative of this industry will have an opportunity to appear before you as chairman of this subcommittee.

We have enjoyed a very good 20-year relationship. We are extremely grateful that you took it upon yourself to become a student of our industry, that you were a major mover in changing this industry in many positive respects, and frankly, you will be genuinely missed. And we wish you great success in the future.

[The prepared statement of Dale E. Heydlauff follows:]

TESTIMONY OF DALE E. HEYDLAUFF
Vice President, Environmental Affairs
American Electric Power Service Corporation

on behalf of the
EDISON ELECTRIC INSTITUTE

Introduction

Good morning, ladies and gentlemen. My name is Dale E. Heydlauff, and I am Vice President, Environmental Affairs, of the American Electric Power Service Corporation. I am also the industry chairman of the Coordinating Committee for the Climate Challenge Program, a program that I will discuss in some detail in a moment. Thank you for the opportunity to come here today to present the views of the Edison Electric Institute (EEI).

EEI is the association of the nation's investor-owned electric utilities. Its member companies serve 99 percent of all customers served by the investor-owned segment of the industry and 76 percent of all electric utility customers in the country. In addition, its members generate 79 percent of all electricity in the nation.

American Electric Power Company, Inc. (AEP) is one of EEI's largest member companies and has its headquarters in Columbus, Ohio. AEP provides power to 7 million people across seven states in the Midwest and East Central regions. AEP generated 120 billion kilowatt hours of electricity in 1993, 90 percent of which came from coal-fired power plants. AEP was one of the first utilities to commit to working with the Department of Energy (DOE) to identify appropriate activities that the company has undertaken or committed to undertake (such as demand-side management (DSM)), and additional measures that the company may undertake on a voluntary basis, that will result in limitations of greenhouse gas emissions by the year 2000.

EEI supports a flexible, balanced, comprehensive and international approach to the global climate change issue. Such an approach should be based on voluntary, cost-effective, scientifically sound policies that are independently justifiable on their own grounds. Current limitations on the scientific understanding of global climate change and the potential negative impacts on the economy, the electric utility industry and our customers of certain proposals demonstrate that policies mandating an emissions cap or command-and-control reductions of greenhouse gas emissions are not justified.

In the electric utility industry, the approach to addressing greenhouse gas emissions emphasizes both supply-side and demand-side options. Demand-side options include overall energy efficiency, electrification of various sectors of the economy, including substitution of electrotechnologies for fossil fuel technologies, and increased forestation and strategic tree planting. With regard to electrotechnologies, there are many existing and emerging electrotechnologies that can reduce energy consumption and greenhouse gas emissions when an electrotechnology is used in place of fossil fuels. Electrotechnologies are being used and developed in sectors of our economy as varied as industrial production, transportation, health care, waste reduction, communications and consumer products. These technologies are and will continue to be increasingly essential as a means to increase productivity and energy efficiency and to promote improvements in air quality, including the reduction of greenhouse gas emissions. In addition, the full range of supply-side energy options also must be considered, including clean coal technologies, nuclear energy,[1] renewables and efficiency measures. These are necessary elements in any plan for addressing not only the global climate change issue, but also national energy policy and energy security.

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[1] In 1993, nuclear energy helped reduce utility emissions by almost one-fourth from what they would have been had fossil fuel-fired capacity been utilized. Nuclear Energy Institute, "Impact of Nuclear Energy on U.S. Utility Fuel Use and Atmospheric Emissions -- 1973-1993" 2, 12 (June 1994).

The Climate Challenge Program

The Climate Challenge Program is a voluntary partnership program that was jointly established by the electric utility industry (investor-owned utilities, public power, rural electric cooperatives and the Tennessee Valley Authority (TVA)) and DOE as part of the Administration's Climate Change Action Plan. Our cooperative alliance is an innovative, experimental program to address an important energy and environmental issue through incentives and encouragement for voluntary, flexible actions. The Climate Challenge Program offers both industry and the federal government the opportunity to seek solutions that are beneficial to the environment and the economy. We hope to demonstrate that through these partnerships, we can move from adversarial, command-and-control regulations to cooperative relationships.

Participation in the Climate Challenge Program is predicated on several important principles, which are incorporated in the memorandum of understanding (MOU) signed by the electric utility trade association heads, TVA and DOE Secretary Hazel O'Leary during Earth Week in April of this year.[2] These principles recognize both the wide range of opportunities for reduction, avoidance or sequestration of greenhouse gas emissions -- cooperatively or independently, and nationally or internationally -- and the need to achieve such actions cost effectively and in accordance with good business practices and utility-specific circumstances. Utility activities will also take into consideration impacts on ratepayers, competitive situations, resource planning, and the mandates and positions of regulatory commissions and boards. In addition, participation in the Climate Challenge Program does not constitute utility endorsement of any particular scientific theory concerning global climate change.

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[2] Copies of the Climate Challenge Program Memorandum of Understanding, Model Participation Accord, Climate Challenge Industry Initiatives, and Climate Challenge Options Workbook are attached to this testimony.

Interest in the Climate Challenge Program is high. According to DOE, hundreds of electric utilities have sent letters of intent[3] to the DOE Secretary, with nearly 100 of those being investor-owned utilities and the remainder being municipally-owned utilities and rural electric cooperatives. Since EEI's member companies represent more than three-quarters of the total electric generation in the country, those 100 investor-owned utilities have a large stake in the Climate Challenge Program. Overall, DOE believes that the Climate Challenge utilities may represent as much as 80 percent of the total electric generation in the United States. A cautionary note, however: there are very real barriers to making the Climate Challenge Program a success, and we will return to those barriers in a few moments.

Let me continue with some straight talk about why the electric utility industry chose to embrace this call for voluntary actions to reduce greenhouse gas emissions. We were motivated to do this for two compelling reasons: 1) concern about the impacts of costly and restrictive mandatory controls on our operations and the economy, and 2) the belief that voluntary initiatives by the electric utility industry through the Climate Challenge Program, in conjunction with other industries through other voluntary programs, can help reduce, avoid or sequester greenhouse gas emissions in a cost-effective manner. In doing so, we believe the Climate Challenge Program can establish a positive precedent for dealing with energy and environmental issues in the future. It has been proven time and again that voluntary actions by business are less costly and more efficient for business, for our customers and for government than mandated actions. Voluntary actions offer increased flexibility and lower compliance costs, and foster innovative responses.

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[3] A copy of AEP's letter to Secretary O'Leary, dated August 11, 1993, is attached. See generally EEI "Global Climate Change: Toward a Comprehensive Policy," Appendix. (A copy of the EEI paper is also attached.)

Let me also emphasize that while we are making a best effort to contribute to the overall goal of reducing, avoiding or sequestering greenhouse gases, we are only one sector of the economy. We are also coordinating with other sectors, which are developing their own voluntary approaches to this issue.

For those who have criticized the adequacy of voluntary measures, we must say that it is far too early to do so. Many of the action items in the Climate Change Action Plan were only in conceptual form when the plan was unveiled last October. It takes time to develop and implement initiatives, which require the establishment of mutual understandings between the private sector and the government, just as it takes time to write legislation and regulations. We believe that there is a sincere interest by, and powerful incentives for, industry to respond to the call for voluntary actions. And we are confident that these programs collectively will yield significant emission reductions by the end of this decade and will provide continuing returns well into the next century.

Our cooperative alliance with DOE represents an important shift in energy and environmental policy -- one reflecting a change in emphasis from regulatory command-and-control to incentives and encouragement for flexible, voluntary actions. This historic partnership represents a shift from reacting after the fact to environmental concerns, to anticipating future needs and opportunities and taking steps to address them constructively and cost effectively.

What Electric Utilities Will Do

What will electric utilities do under the Climate Challenge Program? The MOU sets forth three core elements that are at the heart of what electric utilities will do under the Climate Challenge Program:

- In the next few months, participating utilities will begin to sign utility-specific accords with DOE containing specific commitments, which can include contributions to particular industry initiatives (see attached descriptions of Industry Initiatives paper) and specific reductions of or projects to reduce greenhouse gas emissions. Both the electric utility industry and DOE hope to be able to jointly announce these commitments by early next year in advance of the upcoming meetings of the Intergovernmental Negotiating Committee (INC-11) and the First Conference of the Parties under the Framework Convention on Climate Change.

Utilities will report annually on activities and achievements under the Climate Challenge Program.

Utilities and DOE will confer and evaluate jointly the progress of utilities in achieving Climate Challenge Program goals and to discuss possible voluntary adjustments to the utilities' commitments.

The electric utility industry is currently developing five innovative industry initiatives -- the geothermal heat pump program (National Earth Comfort Program), the EV America program, the electrotechnology and renewable energy investment fund (Envirotech), the utility forest carbon management program, and the international utility efficiency partnership program -- and will be developing additional initiatives. Substantial progress has been made in developing each of these initiatives, and to date, there has been significant interest by electric utilities in participating in these efforts.

Let me give you a brief report on the status of some of these initiatives. For example, 49 utilities have signed on to participate in the Utility Forest Carbon Management Program to date, and its participants are beginning to evaluate candidate projects. The National Earth Comfort Program, whose goal is to increase annual sales of ground source heat pumps from 40,000 to 400,000 by the year 2001, has been successfully launched with utility funding as well as the support of $6.5 million in government funding. EV America is an electric utility-led program to accelerate the introduction of electric vehicles into the marketplace through the placement of as many as 5000 electric vehicles (EV's) into utility, commercial, government and transit fleets by the end of 1997. Membership in EV America has been finalized for the first phase of this program, and EV America has received proposals from five vehicle manufacturers for the development of these zero emission vehicles.

The electric utility industry will devote substantial resources to meet its commitments under the Climate Challenge Program. While the support of and funding from DOE and other federal agencies will be crucial, the great majority of the funds and resources necessary to implement the Climate Challenge Program will be provided by electric utilities. For example, the geothermal heat pump initiative will provide $65 million in utility funding over seven years. Envirotech, the electrotechnology and renewable investment fund, is expected to provide $50-150 million in venture capital from utilities to support introduction of new technologies. And EV America will receive an estimated $12 million in utility funding. In addition to providing funding for the specific initiatives, these investments will enhance productivity, create jobs, and promote economic growth and international competitiveness.

Moreover, an Options Workbook has been developed that provides a compendium of utility actions, ones that individual utilities may choose to utilize (depending on their utility-specific circumstances and regulatory environments) to reduce, avoid or sequester greenhouse gas emissions under the Climate Challenge Program. Many of these options will involve Climate Change Action Plan initiatives. The Options Workbook is a living document. Additional options may be added or existing options modified as our experience increases.

At this time, we are uncertain about the numbers of tons of greenhouse gas emissions that will be reduced by utility actions by the year 2000, but believe the reductions could be significant. For example, we estimate that the geothermal heat pump initiative alone has the potential to reduce or avoid 1-1.5 million metric tons of carbon annually by the year 2000.

What DOE and the Federal Government Will Do

The MOU also lays out the elements of what DOE and other federal agencies will do to promote incentives to encourage cost-effective actions by utilities to reduce greenhouse gas emissions and to lift barriers to implementation of such utility actions. Exhibit C of the MOU details 12 DOE actions, which include working with other federal agencies to achieve appropriate tax treatment or policy for energy efficiency programs; seeking funding for photovoltaics, geothermal, wind and other renewable energy initiatives; and working to facilitate resolution of issues of nuclear waste storage, nuclear power plant life extension and relicensing policies, and future use of nuclear energy. DOE has also agreed to a periodic reassessment to determine whether changes should be made to that list of actions.

And as I mentioned before, some of the initiatives and other programs which may have an impact on greenhouse gas emissions will require government funding assistance. We appreciate the funding commitments that have already been agreed to for the FY 95 budget; however, we urge Congress to note that many of these programs will require consistent support in the future.

First Steps

The MOU is a meaningful first step in defining the framework for overall industry actions to reduce greenhouse gas emissions and for future individual utility instruments that will set forth utility-specific commitments to reduce emissions and to report the results of utilities' actions annually. The MOU provides opportunities for electric utilities to reduce, avoid or sequester any greenhouse gases anywhere through any means. For example, eligible activities include electrotechnology programs, which may result in net reductions in overall U.S. emissions while increasing utility emissions, and international activities.

On the issue of joint implementation, we read with interest the Energy Information Administration's recent analysis of global sources of carbon emissions (DOE/EIA, Energy Use and Carbon Emissions: Some International Comparisons (March 1994)). Aggregate carbon emissions from non-Organization for Economic Cooperation and Development (OECD) countries exceeded those of OECD nations in 1982. In fact, since 1970, carbon emissions have grown 82 percent in developing countries, compared to 28 percent in developed countries. This dynamic is critical to any serious consideration of action to limit future greenhouse gas emissions, and suggests some urgency in exploring opportunities for joint implementation with developing countries. I will comment further on joint implementation shortly when I speak about international activities.

Barriers to Successful Implementation

We must inject some cautionary notes into this explanation of the Climate Challenge Program. Let us briefly discuss three types of barriers to successful implementation of the Climate Challenge Program:

First, there are various legal, institutional, economic, market, informational and other barriers to implementation of voluntary emission reduction, avoidance or sequestration activities. We have previously discussed how DOE and other government agencies can assist in the mitigation or removal of those barriers. (See, for example, attached MOU, Exhibit C.) At the state level, the electric utility industry will closely scrutinize the activities of several state commissions, such as that ongoing in California, which are looking at the restructuring of the electric services industry and reforming regulatory policy in their respective states. If implemented without consideration of the impact on programs such as Climate Challenge or on other energy efficiency investments, such proposals to restructure the electric utility industry have the potential, among other things, either to restrict severely or to negate entirely the ability of regulated electric utilities to participate in the programs under the Climate Challenge in an effective manner.

The situation could be further exacerbated if the states (for retail sales) or the Federal Energy Regulatory Commission (for wholesale sales and transmission services) do not allow utilities to recover the full costs of capital investments that were previously found by regulators to be prudently incurred. If such investments are placed at risk, new utility investments of all kinds -- particularly investments such as DSM, which may lower long-term costs of energy use but raise customer costs in the short term -- would be substantially discouraged. In short, in order for the Climate Challenge Program to be a success, DOE must do its part, and other federal and state agencies must do their part, to ensure that regulatory decisions do not frustrate the implementation of the program.

Second, in their letters of intent to Secretary O'Leary, the Climate Challenge utilities indicated that participation in the program was predicated upon timely and acceptable greenhouse gas emission reduction reporting guidelines under subsection 1605(b) of the Energy Policy Act. EEI commented extensively on the proposed guidelines, and the final 1605(b) guidelines are expected to be published in the near future. Virtually all Climate Challenge Program utilities have stated that they must find the final 1605(b) guidelines to be workable and acceptable before they will sign utility-specific participation accords with DOE.

Third, developments in the international arena -- specifically the proceedings of the Intergovernmental Negotiating

Committee (INC) and the lead-up to the First Conference of the Parties under the Framework Convention on Climate Change (COP), which will take place in Berlin in March 1995 -- also bear close scrutiny. EEI has been a full and active participant in the United Nations climate change process and the various committees which are part of it, especially the work of the INC. I would like to share our views on several of the international dimensions of the climate change issue.

International Issues

At the February and August 1994 INC meetings in Geneva, the U.S. delegation made a number of policy statements on key issues before that body. In general, we commend the positions that it took relating to joint implementation and the need for broad international participation in the climate change issue. Joint implementation must be a key to any comprehensive action to address this issue, and the fact that the primary commitments under the Framework Convention apply only to developed nations places a severe limitation on the ability to meet the objective of the treaty.

However, we are very concerned that the Administration has prematurely taken the position that commitments made under the Framework Convention are inadequate because they "do not. . . adequately address policies and measures beyond the year 2000" and has taken this position without a clear idea of what policy it should support after 2000. The Framework Convention requires that the Conference of the Parties at its first meeting next year, again by 1998 and periodically thereafter review whether the commitments of Annex I parties are adequate. Furthermore, the commitments under Articles 4.2(a) and (b) of the Convention are open-ended and have no time limitation. These commitments do not stop in the year 2000 or in any other year. In addition, science has been unable to establish what is a level of greenhouse gas concentrations in the atmosphere that would prevent "dangerous" anthropogenic interference with the climate system under Article 2 of the Convention, and the scientific capability does not now exist to make such a determination. This makes a determination of adequacy of the Convention provisions virtually impossible in the near term.

We are at a very early and fragile stage in the implementation of the Convention and are without essential information on what action the Parties will be taking. Indeed, national action plans from the various parties were only required to be submitted in late September, and the First Conference of the Parties will not take place until March. It is premature and potentially counterproductive to do anything more than develop a process for conducting a review of the adequacy of commitments in the future to see what, if any, appropriate action is needed in the post-2000 period.

The electric utility industry is also concerned that any modification of substantive commitments at this time may have a negative impact on the Climate Challenge Program and other voluntary programs. The adequacy of commitments issue is one of serious concern to the electric utility industry. Modification of the substantive commitments of the Framework Convention (including after the year 2000), before the Climate Challenge Program has a fair chance to get off the ground, threatens to undermine the entire foundation of voluntary utility actions. If the voluntary participants in the Climate Challenge Program believe that there might be more stringent, mandatory requirements for greenhouse gas reductions arising out of the INC/COP process, their inclination might be to wait and make their business decisions based on the new requirements rather than proceed with an activity that reduced greenhouse gases between now and the year 2000.

At the recent meeting of the INC-10 in Geneva, we found substantial interest in the Climate Challenge Program and in the voluntary approach that it represents. As I mentioned before, both the electric utility industry and DOE hope to showcase the actions to be taken under the Climate Challenge Program at INC-11 next year. The U.S. government has taken a world leadership role by including voluntary programs such as Climate Challenge as a centerpiece of the mitigation portion of its national action plan. We applaud its efforts to promote voluntary, cost-effective programs in lieu of command-and-control actions, and we therefore urge the Administration not to make premature judgments on the issues and not to commit itself to actions to reduce greenhouse gas emissions in the post-2000 time frame that go beyond the current commitments of the Framework Convention.

The continuing development of joint implementation and the U.S. Initiative on Joint Implementation (USIJI) should also be a prerequisite before there is any consideration of modification of commitments or of the need for other actions such as the development of a protocol. As the statistics I mentioned earlier demonstrate, greenhouse gas emissions are increasing at a dramatically higher rate in developing countries than in developed countries. Joint implementation presents an opportunity for U.S. companies to share with developing countries technologies that promote energy efficiency and limit greenhouse gas emissions. Earlier this year, the groundrules for the pilot phase of the USIJI program were announced, and proposals for projects in this first phase are now being accepted until November 4.

While we support the principles of joint implementation, we are concerned that the criterion of "additionality" -- that the actions must be above and beyond what would have been taken otherwise, in the absence of the USIJI program -- could have a chilling effect on the promotion of legitimate joint implementation projects and may weaken the effectiveness of the program. This may make the U.S. vulnerable to efforts by other countries, which do not support the concept of joint implementation, to make the criteria under the INC/COP process more strict and to increase the obligations on developed nations.

Mitigation actions must be based on a sound scientific foundation. The Intergovernmental Panel on Climate Change (IPCC), the body charged with marshalling the scientific data on which the Parties to the Framework Convention will base their deliberations, will complete its Second Assessment Report in the fall of 1995. To date, the participants in the IPCC process have not even addressed the issue of -- much less attempted to reach a consensus on -- a level at which increased man-made emissions constitute a "dangerous" interference with the global climate system. Under these circumstances, additional protocols as well as command-and-control regulatory schemes are inappropriate.

Recent developments have raised serious concerns on our part regarding the IPCC process. We believe that the U.S. representatives to the IPCC should strive to ensure that the activities undertaken under the auspices of the IPCC promote a full, open and robust evaluation of the science of the global climate change issue. Even with the increasing base of knowledge about the global climate system, there is no consensus on and substantial uncertainty remains concerning many critical scientific issues. Therefore, the proceedings of the various working groups of the IPCC should accord due process to all commenters and should include all views in the published findings of these groups.

In summary, as the U.S. and the other Parties prepare for INC-11 and COP-1, we urge them to:

(1) Support the full process specified by the Convention for the review of the "adequacy of commitments" by COP-1 in March 1995.

(2) Not draw any premature conclusions as to the outcome of that review.

(3) Oppose any efforts to amend the Convention by protocol or otherwise until: (a) all national action plans have been

submitted, reviewed and assessed; (b) the IPCC has completed its work on its Second Assessment and published the findings of all working groups; and (c) a scientifically supportable definition of "dangerous" interference has been agreed upon.

(4) Encourage the INC to adopt, for consideration by COP-1, decisions on criteria for joint implementation that promote and encourage the widest possible measures that will reduce greenhouse gases and enhance sinks.

The Energy Policy Act, the Clean Air Act and the Climate Change Action Plan

EEI supports many of the programs of DOE and other federal agencies to implement the numerous provisions of the Energy Policy Act of 1992 affecting global climate change. The electric utility industry also generally supports implementation of these programs on a timely basis, backed by full congressional funding.

In addition, significant reductions in greenhouse gas emissions will result from implementation of the Clean Air Act Amendments of 1990. The Environmental Defense Fund has estimated a net average annual emission reduction of about 45 million metric tons of carbon (over 1995-2005) due to implementation of the Clean Air Act Amendments. The Environmental Protection Agency (EPA), in a more limited analysis, projected that acid rain controls will result in reductions of 16-19 million metric tons of carbon.

Furthermore, while EEI supports many of the government initiatives under the Climate Change Action Plan, the electric utility industry does not want to be placed in the position of favoring those programs at the expense of others in the appropriations process. We understand that this Administration has placed a priority on energy efficiency and renewable programs, but we continue to believe that, from the perspective of global climate change and other perspectives, other supply- and demand-side programs, such as clean coal technologies and nuclear energy, merit full support and appropriations.

With regard to particular Climate Change Action Plan government initiatives, there are several that merit full or additional support and funding. These include a number of industrial energy efficiency actions, such as Motor Challenge; energy-efficient process technologies (including one-stop shops); energy and diagnostic centers; and source reduction, pollution prevention and recycling. In fact, EEI strongly supports increases in the authorized and appropriated funding for the NICE[3] Industrial Pollution Prevention Grants Program, a joint DOE-EPA program to enhance national industrial competitiveness through efficiency, energy, environment and economics. These kinds of industrial programs provide the biggest "bang" for the federal buck, because not only do they benefit the environment and reduce greenhouse gas emissions, but they also enhance productivity, jobs, economic growth and international competitiveness.

EEI wishes to single out two Climate Challenge Program industry initiatives, the geothermal heat pump program and EV America, that have already received initial federal funding but which must continue to receive full or additional government support in the future. For example, Congress has approved $6.5 million in FY 95 funding for the geothermal heat pump initiative. However, that program will need $35 million from DOE over seven years to be successfully implemented. Similarly, for FY 95, $85 million has been appropriated for DOE electric vehicle-related programs, and the Department of Defense budget includes $15 million in appropriations for electric vehicle procurement activities as well as $15 million to continue electric vehicle research programs. These appropriations are important steps toward the development and commercialization of these technologies. However, funding and support for these programs must be sustained in future years.

Conclusion

The electric utility industry is extremely proud of the partnership that we have forged with DOE in the Climate Challenge Program. We sincerely hope that it ushers in a new era of positive collaboration between the electric utility industry and the federal government on energy and environmental issues.

We take these commitments seriously, and we are confident that meaningful reductions of greenhouse gas emissions will be realized by the end of this decade and beyond. These commitments, however, will be undertaken in the context of the international actions taken pursuant to the Framework Convention. We urge the U.S. to adopt the recommendations we have made here concerning the upcoming work of INC-11 and COP-1. We urge the U.S., as well as the other Parties, to support the full process specified by the Convention for reviewing the adequacy of commitments and not draw any premature conclusions as to the outcome of that review. Moreover, they should oppose any efforts to amend the Convention by protocol or otherwise until all national action plans have been submitted and reviewed and until additional scientific studies being undertaken by the IPCC have been completed. Finally, the U.S. should encourage INC-11 to adopt, for consideration by COP-1, decisions on criteria for joint implementation that will encourage the widest possible measures that will reduce greenhouse gases and enhance sinks. Doing so, we believe, will strengthen the position of the United States as the leader in the efforts to protect our global climate system.

EEI appreciates the opportunity to present the electric utility industry's views, and I will be happy to answer any questions that the Chairman or the Subcommittee may have.

Mr. SHARP. Well, thank you very much for those kind remarks. Lest the record reflect the industry and I didn't agree on lots of things, both it and I changed our minds over 20 years as to what we did believe. But I do appreciate your remarks.

Governor Earl.

STATEMENT OF GOVERNOR TONY EARL

Mr. EARL. Thank you, Mr. Chairman.

Let me also add my commendation, and as a personal aside, assure you that life after elective office is good.

Mr. SHARP. That is what I hear from all formerly elected officials.

Mr. EARL. And I can certainly testify to that.

Mr. Chairman, I am here on behalf of the Center for Clean Air Policy to make a number of points. One is to strongly endorse the ongoing efforts to promote joint implementation. We think it makes some sense. We think there are some problems in the short-term horizon which I would like to raise.

We think that those problems would significantly hinder the efforts at getting a wide variety of pilot projects going. And I will talk about one in particular that we are involved in and then I conclude with some very general recommendations.

Let me say at the outset, that we believe that joint implementation makes great sense as part of a global strategy to address the threat of climate change, to promote the transfer of technology and investment and to foster sustainable development patterns. It highlights—joint implementation highlights, the need for international efforts to address our environmental problems, not only air problems but ultimately all the problems. The phenomena that Dr. Watson described and the approaches at addressing those can't be done State-by-State or nation-by-nation, but ultimately have to be addressed internationally, and joint implementation builds the base for that.

Joint implementation also is important in that it changes the way that multilateral assistance works. Historically, multilateral assistance has been nation-to-nation, typically for economic development, often indifferent to the environment, all too frequently harmful to the environment. This changes that.

Joint implementation changes the focus and brings the private sector into play to make investments in projects that have explicit environmental benefits. That is not to say that there aren't some honest concerns about it. And I understand the concerns that Dr. Lashoff and his colleagues at NRDC and others have raised.

But all too much of the debate about joint implementation has been finger-pointing or it has been a rehashing of historical differences between North and South. I think that we ought to get on with pilot projects that answer the real problems, and that is why I am so strongly in support of these efforts.

Let me give you an example of some of the current concerns that were raised at the last meeting I think are not helpful. There has been a suggestion made by some at the recent INC meeting that there should be no credits given for pilot projects and that projects which have the potential, merely the potential to earn a return should be disqualified from consideration, adoption of those proposals that are going to make it very difficult to get private enterprise involved in the pilot project program.

And let me give you a specific example of how it would hinder a project we have been deeply involved in and that project is one we have discussed with members of your staff and other colleagues for some time. It is a project which involves a fuel switch and cogeneration in a community in northern Bohemia in the Czech Republic called Decin. Decin is a community of 55,000 people. Eighty percent of the people in that community live in congregate living. Congregate living is heated by heating plants that burn brown coal. It is one of the most polluted towns in the Czech Republic. The air pollutants far exceed national and international health standards.

In January of 1987, for example, the SO_2 concentrations were 10 times higher than the health standard promulgated by WHO. Childhood mortality in this community is twice that of the rest of the Czech Republic, half of the pediatric patients in the hospitals are there because of respiratory problems. Life expectancy for residents of the region is 5 years less than other parts of the Czech Republic. Indeed, under the old regime, people were given a bonus to stay there called the "death bonus" or "burial bonus" or else they would have gotten out of the area.

Since the new government has come along, they have made addressing this a major concern. They have the will but they have not had the wherewithal. The Danes did an environmental study which assessed the emissions that are there now and made a series of recommendations and turned to us, the Center for Clean Air Policy for some way they could begin to implement them.

One of the big problems was technology. One of the big problems was cash. We were able to persuade three U.S. utilities, Wisconsin Electric Power—and I should add the law firm that I am associated with represents them and I want that to be on the record—NIVSCO from your State, and Commonwealth Edison to come forward with $600,000 in cash to help finance 40 percent of the fuel switch.

This community is 15 kilometers away from a natural gas pipeline. Once they were able to get the fuel switch project up and going, they decided that they would also like to go to cogeneration, which they can do.

By switching to natural gas, they can downsize the facility from 19 megawatts to a little less than 11 megawatts. The natural gas pipeline is on its way there. New boilers are in the process of being—bids are out for the new boilers now. The result of this, when it is done, the fuel switch, will be that carbon dioxide emissions will be reduced by over 65 percent, nearly 13 million tons a year. Sulfur dioxide emissions will be virtually eliminated. Ash will be eliminated and there will be very reduced levels of NOx, toxicants and particulants. This is a project that will have enormous benefits for the environment, will improve energy efficiency, and perhaps most important of all, have a very positive immediate impact on public health.

Now, it wouldn't have got going if the three utilities wouldn't have come forward with the $600,000 which was able to leverage the project going. There is a possibility of a rate of return, though it is certainly not going to be a profit leader for any of these utilities.

They are in it, frankly, because they think the that joint implementation makes sense and they are in it because they believe that any emissions and CO_2, any reductions in CO_2 emissions ought to be scored, kept track of so that if at some point there is a cap on CO_2 emissions, as has been referred to by Dr. Lashoff, somebody has kept track of those and they may get credit, some credit for them.

They haven't asked for a specific credit but just that they be given credit for doing it, and that has been noted. Now if the kinds of criticisms that were raised at the last meeting of the INC were in place, we would not have been able to persuade these utilities to enter into this project.

Let me conclude with some recommendations in light of what I have said. We think that the United States has to continue to take strong leadership in the joint implementation debate. And I would like to commend Secretary O'Leary, Rafe Pomerance and others who have done just that. They have been very helpful to us in terms of trying to advance this pilot project, and we think they must continue that strong leadership.

We should continue to pursue bilateral agreements, such as the one recently initiated with Costa Ricans, so you don't have to go through the painstaking project-by-project process but you can do them within the frame work of a bilateral agreement. The U.S. Government could help in screening to identify potential projects that do pass muster, that do have the significant environmental benefits and that will in advance address the concerns of those who are worried about picking the low-hanging fruits, et cetera.

We should showcase models of good projects and case studies of how they were developed. And in the meantime, most important in terms of providing an incentive for more private sector enterprise to get involved is to make sure that the voluntary reporting program under 1605(b) of the Energy Policy Act works, that it is meaningful, that there is a place to keep track of what kind of emission reductions are taking place and that there is an assurance that at some point in the future, if there is a cap, much less a ratcheting down, some credit will be given for these voluntary emissions reductions that is take place in the future.

Let me conclude by saying that your staff has been particularly helpful to us in trying to advance this pilot. We believe this pilot, once it is in effect, we believe it—we are hoping that we will be online by the heating season of 1995, 1 year from now—will slow the way for how this can work and that it will be beneficial for the environment and for all who care about advancing the cause of the global environment.

Thank you, Mr. Chairman.

[The prepared statement of Governor Tony Earl follows:]

Statement of
Governor Tony Earl
Chair, Center for Clean Air Policy

My name is Tony Earl. I am the former governor of the state of Wisconsin and Chair of the Center for Clean Air Policy. I am pleased to be presenting testimony today before the House Subcommittee on Energy and Power on global climate change policy, particularly joint implementation. The Center has been actively involved in both U.S. and international policy and program initiatives to reduce and offset emissions of greenhouse gases. As you may know, we are also involved in what we think is a first-of-its-kind fuel switching and energy efficiency joint implementation project with the Czech Republic.

Joint implementation (JI) is a provision, included in the Framework Convention on Climate Change, that allows for two or more nations to jointly plan and implement a greenhouse gas or offsetting project. Joint implementation is important environmentally for two principal reasons: 1) it provides an opportunity to select projects on a global basis that maximize both greenhouse gas reduction benefits and other environmental benefits such as air pollution reduction while minimizing cost and 2) it creates incentives for developing countries as well as multinational companies to begin to evaluate potential investments through a climate-friendly lens. While the debate on how to establish the criteria and institutional capacity necessary to encourage joint implementation projects continues in the international community, the U.S. government is creating new incentives for U.S. companies to develop joint implementation pilot projects now and by participating in an historic agreement with Costa Rica on joint implementation. The U.S. has taken a leadership role in joint implementation, establishing two complementary domestic programs that allow U.S. companies to measure, track and score their net greenhouse gas reduction achievements now. Three U.S. utilities are making a financial investment and working with the Center for Clean Air Policy in developing a fuel switching and energy efficiency project in the city of Decin in the Czech Republic. The project offers a concrete example of what a real-world JI project could look like. The Decin project provides an ideal test case for assessing the adequacy and potential impact of the draft criteria for the U.S. Initiative on Joint Implementation as well as for the draft criteria prepared by the INC Secretariat.

Background

In 1992, over 150 nations gathered together in Rio de Janeiro for the first-ever Earth Summit. One of the results of that historic gathering was the Framework Convention on Climate Change (FCCC), the first international attempt to reduce the growth of greenhouse gas emissions worldwide and address the threat posed by global climate change. Within the Convention there is a single provision that has sparked discussion and debate in national capitols around the world. That provision, joint implementation (JI), allows two nations to work together to reduce or offset greenhouse gas emissions. Since 1992 much time and discussion has taken place in relation to the JI provision, as the Intergovernmental Negotiating Committee (INC) has attempted to develop criteria for its implementation, to present to the Conference of Parties (COP), meeting for the first time in Germany in March, 1995.

Since the signing of the Framework Convention in June 1992, the U.S. Government has taken a series of steps related to meeting the requirements of the treaty to develop and report national emissions inventories, a detailed description of the "policies and measures... adopted to implement its commitments", and "estimates of the effects these policies will have on ...

emissions ... and removals by sinks". Through interdepartmental working groups, and formal and informal discussions with experts and the affected interests, the Administration completed preparation of an initial U.S. Climate Change Action Plan (U.S. Action Plan). The U.S. Action Plan was released in October 1993 and has served as the foundation for the evolving national response to climate change issues.

The U.S. Action Plan is a major step forward in U.S. efforts to address global climate change. The Plan is based on a broad flexible approach -- including encouragement for voluntary efforts -- and relies to a significant degree on the voluntary efforts of utilities and industry across this country to take steps to reduce net emissions of greenhouse gases. The U.S. Action Plan includes a relatively wide range of mitigation, emission reduction, and offset measures. Among the many options included in the Plan are the use of forestry and methane recovery offsets, promotion of energy conservation and efficiency measures, and joint international efforts.

The Action Plan established the first JI pilot program in the world to encourage U.S. industry to become trail blazers in developing, implementing, and recording their net greenhouse gas reduction achievements abroad -- the U.S. Initiative on Joint Implementation (USIJI). While the Action Plan is targeted to meeting the stabilization goal solely through domestic actions, the Plan recognizes the "significant potential for cost-effective emissions reductions in other countries." USIJI holds promise for helping to expand the availability of financing and investment in other countries by U.S. companies interested in garnering experience with JI, pursuing some new market opportunities for their products and/or services, and supporting host country environmental and economic priorities.

The results of these projects and domestic efforts to reduce or offset greenhouse gas emissions can be registered under Section 1605(b) of the Energy Policy Act of 1992 (EPAct) -- the National Inventory and Voluntary of Reporting of Greenhouse Gas Emissions. This legislation, passed by the U.S. Congress in 1992, was one of the first attempts at addressing the need for more information on U.S. greenhouse gas emissions levels and beginning to encourage U.S. industry to initiate efforts to reduce or offset those emissions. In the last two years the U.S. Department of Energy has been working to establish a program that allows U.S. industry to voluntarily record their greenhouse gas emissions and their efforts to reduce or offset them.

We believe, if designed right, this program can provide U.S. industry with an incentive to reduce emissions at the source, offset emissions through carbon sequestration projects (forestry and agricultural projects) or through off-site activities, such as coalbed or landfill methane recovery projects, either in the U.S. or internationally. Among the activities that are likely to be recorded under the program are USIJI projects.

SLOW MOVEMENT IN THE INTERNATIONAL ARENA

At the most recent INC meeting in Geneva, additional criteria were presented by the Secretariat. Adoption of two of these proposed criteria could significant limit participation in joint implementation and the significant benefits it offers during the pilot phase. The two major issues discussed were the disallowance of (a) "credit" for joint implementation projects and (b) disqualification of joint implementation projects that have the potential to earn a rate of return for investors.

The significant benefits that joint implementation can offer -- in reducing the threat of global climate change; in offering host countries other environmental benefits, such as improved air quality or meeting biodiversity goals; in promoting the transfer of U.S. environmental and energy technologies abroad; and in providing jobs in the environmental and energy fields in both the U.S. and the host country, can be lost or delayed if we put unnecessary restrictions on these projects. By creating these barriers to development of joint implementation projects we run the risk of removing some of the few incentives that exist for these projects currently.

The Center believes that joint implementation offers incentives for developing countries and Central and Eastern European nations, as well as multinational companies and other industry to begin to evaluate potential investments through a climate-friendly lens. What this means is that projects or activities that are marginally good investments can be viewed more favorably because of the potential for "shared" greenhouse gas reductions. If you eliminate the added incentive of these "credits" or disqualify all projects that offer a potential rate of return, you tip the scales in the wrong direction and reduce the number of environmentally beneficial international projects that will move forward. To bar both "credits" and financial returns would basically kill all private sector JI efforts outside the forestry sector, thereby defeating the purpose of having a pilot phase.

We encourage the U.S. to continue to take a strong stance in the INC and Conference of Parties meetings for elimination of these unnecessarily restrictive criteria. We believe the USIJI model on both of these issues should be encouraged in the international arena as well. Our greatest concern should be that these projects are environmentally effective; beneficial to and welcomed by the host country and community; and are designed to offer the maximum benefits to all concerned.

U.S. LEADERSHIP ON JOINT IMPLEMENTATION

At home and abroad, the U.S. has taken the lead on joint implementation, and I would like to take this opportunity to commend them on all their efforts. The USIJI program is a model of responsibility and commitment to making a good idea work. The criteria that have been developed address the key issues that are necessary to ensure environmental quality, wise use of natural and financial resources and sharing of U.S. expertise and technology to better the quality of life globally.

Recently, the Administration took a bold new step in furthering its role as a leader in this area. The first-ever statement of intent on joint implementation between two nations was signed by Vice President Al Gore and President José Maria Figueres of Costa Rica. The determined efforts of President Figueres to ensure an environmentally and economically sustainable future for the people of Costa Rica and the U.S. commitment to encouraging U.S. private investment in climate-friendly activities abroad made this historic agreement possible.

While much of the international community continue to debate how to proceed with these joint initiatives, the U.S. and Costa Rica are moving ahead to make these projects a reality. Only through action can we prove that these ideas really work. Much of joint implementation debate is not focused on the real issues of joint environmental issues but is reduced to reduced to finger pointing and the historic grievances of North - South relationships. Instead, bilateral agreements can shape INC thinking by demonstrating that "good" joint implementation projects go beyond the rhetoric toward real environmental action that can benefit everyone.

I know Energy Secretary Hazel O'Leary has been very active in facilitating this and other potential agreements between developing countries and nations with economies in transition and the U.S. I commend her on all her efforts and look forward to seeing more of these agreements come to fruition.

I also wish to thank Secretary O'Leary for her gracious hosting of the Mayor of Decin, the CEOs of the three investing utilities and the Center at the announcement of our joint implementation project in the Czech Republic.

THE DECIN JOINT IMPLEMENTATION PROJECT

Decin is a heavily industrialized center with a population of 55,000 located in the northwestern corner of Northern Bohemia in the Czech Republic. The city sits astride the Elbe River in a deep valley about 10 kilometers wide, at the base of 500 meter tall ridges. Eighty percent of Decin's residents live in multifamily flats. Only about one-fifth of the existing housing is in single-family units.

Most of the City's housing units are heated by local brown coal (lignite) -- used to fuel the district heating systems and individual homes. As of 1992, 75 percent of the square footage in the community was heated by coal, with about half of this total linked to the district heating system. Because the stacks on the district heating plants are low, emissions from the plants lay within the valley. The extensive use of brown coal is the principal source of the high levels of air pollution -- sulfur dioxide (SO_2), nitrogen oxide (NO_x), air toxics and particulates -- suffered by the region. While large power plants within the Czech Republic have begun to receive assistance, district heating plant projects are often too small to attract multilateral funding, despite their devastating effect on the area.

Because of its location in a deep valley and its heavy reliance on brown coal, Decin is one of the most polluted towns in Northern Bohemia. Concentrations of some air pollutants far exceed national and international health standards. For example, the highest twenty-four hour average for SO_2 concentrations occurred in January 1987 and was more than ten times higher than health standards set by the World Health Organization. Heavily contaminated air threatens human health throughout the region. For example, childhood mortality rates are twice that of the rest of the Czech Republic. Half of the pediatric patients in area hospitals suffer from conditions linked to air pollution. And, on average, life expectancy for residents in the region is five years shorter than in other parts of the Czech Republic. To prevent the large scale relocation of environmental refugees, the prior regime resorted to financial compensation -- termed "burial money" by recipients -- to those who stayed in the region.

Under the leadership of Mayor Kunc, Decin has placed the highest priority on developing specific projects to immediately begin reducing air pollution in order to improve the health of local residents. In the last several years the City has become a leader in the Czech Republic for its efforts in addressing its environmental problems. A year-long environmental study, completed for the City by the Danish consulting firm of Bruun and Sorenson in April 1993, was done to provide a series of recommendations to the City of Decin in their attempts to reduce life threatening pollution.

Three U.S. utilities -- Wisconsin Electric Power Company, NIPSCo Industries, Edison Development -- are investing in a project with the City of Decin to develop a first-of-its-kind pilot joint implementation project. These three utilities are both deeply concerned about the environmental devastation affecting the Decin region and interested in proving the concept of joint implementation and all the benefits it can offer. They should be commended for their efforts.

The Project

One of the City's five district heating plants, the Bynov District Heating Plant, which provides heat and hot water to the multi-family dwellings and several businesses, will be switched from brown coal to natural gas. At the same time the system's efficiency will be significantly improved, allowing the facility to be downsized from 19 to 10.6 MW. Because of the City's commitment to establishing their community as a model of environmental quality and technological advancement, the City is presently expanding the project to cogeneration.

Currently, the Bynov plant has three 5.6 MW coal fired boilers and one 2.8 MW coal fired boiler. By early 1995 the Czech government will extend an existing natural gas pipeline to the gate of the district heating plant. With partial financing from the three U.S. utilities, the City will be able to replace existing coal fired boilers with new, more energy efficient gas engines. The City will also replace the existing, poorly insulated, pipes that carry the hot water to the multi-family dwellings. The new pipes will also increase the efficiency of the system eliminating the need for conversion from hot water to steam.

At this time, both the apartment blocks and the district heating plant are owned by the federal government. It has already been agreed that in 1995 the Bynov District Heating Plant will be privatized under the new "district heating enterprise" and primary ownership will be relinquished to the City. The apartment blocks will also be privatized under the "housing enterprise."

Impacts of the Project

The fuel switch and efficiency improvements will reduce air pollution -- with benefits to both the regional and global environment. The simple measures being invested in by the three U.S. utilities and the City will have the following impact:

Carbon Dioxide	**reduced by 12,800 tons/year** *(a reduction of over 65%)*
Sulfur Dioxide	***Virtually eliminating SO_2 emissions from the district heating plant***
Ash	***Total elimination of this will be accomplished***

While the CO_2 reductions will help to reduce the threat of global climate change, the immediate results from the project will be demonstrated most notably in the reduced levels of SO_2, NO_x, air toxics and particulates. For the community of Decin, this project will help them continue to improve the air quality and poor health that have result from uncontrolled emissions of these air pollutants.

Financing the Project

In attempting to finance this project early on, the City of Decin found that to receive a loan, they would have to pay interest rates in the high teens, and pay back the loan, on average, in four to eight years. If they could increase the project downpayment the interest rates would decrease and the payback period would increase. Initially, there were two options for the City within this project -- at $1.5 million they can convert the boilers from coal to gas fired boilers and make efficiency improvements on the heat distribution network or, at approximately $7 million, they could develop the project further into a cogeneration project. The City has already had discussions with the national electric distribution company and received a commitment to buy power from the cogeneration project.

The three U.S. utilities will provide $600,000 -- $200,000 each -- to the City, which in turn will use the capital to finance the remaining portion of the project costs. For the initial simple fuel switching and efficiency project, this amounted to 40 percent of the necessary financing. In return for a "sharing" of the emissions reductions, the U.S. utilities will receive stock shares in newly privatized company. Although initially these stocks will offer little to the project investors, there is the potential that these U.S. utilities could earn a rate of return in the future. With the utilities' investment the City has already approached several Czech banks and have received more favorable financing options which make the project viable for the City to implement.

CONCLUSIONS

Since 1992 there has been significant movement in the global climate change debate. Because greenhouse gas emissions and emissions reductions know no national boundaries, and the impacts of global climate change threaten worldwide economies, this debate has been going on both in individual nations and in the international arena. A major focus of these discussions has been the potential for joint projects, between nations, to reduce greenhouse gas emissions. The potential for these projects, in both nations with economies in transition and in developing countries, is enormous -- as is the need for environmental investment. In Central and Eastern Europe and the former Soviet States alone, the opportunities for investment in energy efficiency projects is significant. And these countries are seeking this investment.

The U.S. has become a leader in promoting the concept of JI and providing incentives for U.S. companies to invest in these projects. While the international debate continues, USIJI and

Section 1605(b) of EPAct offer U.S. companies the assurance that their efforts to reduce greenhouse gases today will not go unnoticed. By registering the results of these projects, we help move the international debate along by demonstrating the benefits that can be achieved by these projects -- in reducing the threat of global climate change, enhancing the environment in host countries and promoting the efficient use of economic resources. At the same time, in looking to the future, we realize that when the U.S. chooses to set specific caps on greenhouse gas emissions, the registry can be used to ensure that these good deeds are rewarded, not punished.

Recommendations

The U.S. must continue to take a strong leadership role in international negotiations on joint implementation. At this last INC meeting the U.S. delegation gave a ringing endorsement for the potential of JI. I understand that the first round of projects to be approved under the USIJI program will be announced at either INC 11 in New York or the first meeting of the Conference of Parties in Berlin in March, 1995. This is an excellent way for the U.S. to show its commitment to exploring the potential of these joint partnerships in helping to meet a variety of environmental and economic development goals while reducing the threat posed by global climate change.

Also, the U.S. must continue to pursue agreements with other nations on environmental goals, including JI to open the way for these projects to move forward. Presently there is only limited incentive for industry to actively pursue JI projects. Under a bilateral agreements, project by project review will not be needed, removing one of the key barriers, especially within the host country, that hinders joint implementation projects from moving forward. These agreements can serve as a model for other countries by providing the concrete examples of what real investment in these projects can accomplish for them. Also it can move the international debate forward by providing the examples of what works.

The U.S. must also do all that they can at home to provide incentives and assistance to industry interested in becoming involved in JI projects. As we have found with our project in the Czech Republic, there is a high cost involved in developing pre-feasibility and feasibility studies, in developing the proper legal and financial structure to meet the needs of all participants, and to verify and monitor the achievements of the project. While much of these costs should be incurred by the participants in the project, there is assistance that the government can provide. Probably the key factor in getting any JI project off the ground is the development of a screening to find the first round of potential projects, providing the necessary technical and financial data to determine if a project is environmentally sound and cost-effective as an investment. Without this information, few projects will move forward.

The U.S. could also establish models of good projects and case studies on how they were developed to assist other companies interested in participating avoid some of the common pitfalls. Much of this will already be collected in the USIJI process. This information should be made readily available to the public. I believe this has already been discussed in the USIJI proposal workshop as a goal of the Evaluation Panel. I strongly support this idea.

Finally, I'd like to address other U.S. programs that also provide an incentive for U.S. industry investment in JI projects, especially the Voluntary Reporting Program under Section 1605(b) of the Energy Policy Act. While joint implementation offers us a host of cost-effective environmental benefit globally, the U.S. should be working hard at home to address our own emissions as well. Some of the programs established under the U.S. Climate Change Action Plan, such as Climate Challenge, can be greatly effective in promoting voluntary domestic initiatives to reduce or offset greenhouse gas emissions. However, without a "real" program that records real projects with real results. Without emissions caps and real targets to reduce emissions there are limited incentives for industry investment in greenhouse gas reducing or offsetting projects. If the 1605 program offers opportunity to accurately record their achievements, industry has a chance of being receiving credit in the future for their activities now. As presently designed, it is likely we will have accurate information on our international initiatives and very little real information on our domestic efforts.

Mr. SHARP. Thank you very much.

Mr. Hemphill, happy to hear from you now.

STATEMENT OF JOHN HEMPHILL

Mr. HEMPHILL. Thank you very much.

I would like to say it is an honor to be here today and especially in light of the fact that you are—I guess what we call a short-timer here. But I do want to echo the sentiments expressed by others concerning your distinguished career in public service and the fact that many of us will miss you not being here.

I am executive director of the Business Council for a Sustainable Energy Future. It is a relatively new group. We formed about a little over 1½ years ago, and we are comprised of business leaders from the energy efficiency renewable energy, natural gas and electric power generation market that share a commitment towards the realization of the Nation's economic, environmental and national security goals through the rapid deployment of sustainable energy technologies and services, and that is technologies that are economical, efficient and low-polluting.

We believe that we, our industries, can play a constructive role in the issue of global climate change. We believe that there are cost-effective solutions available today that can mitigate the growth in the greenhouse gas emissions. And furthermore, we believe that there are some emerging technologies that are on the horizon that will contribute to the possibilities that are afforded to reduce greenhouse gas emissions.

We believe that the—further believe that the vision set forth in the Climate Action Plan represents an important first step. But like Mr. Lashoff, we are concerned that more will need to be done, but we believe that the overall framework is correct. It is a matter, I think, of getting it right and getting on with the implementation of these kinds of activities.

We furthermore can look at what is happening in the real world and see that it validates our beliefs. When you look at the most recent data with respect to the U.S. domestic utility industry's purchases of new incremental capacity, you will see that over 70 percent of it comes from either natural gas or renewable resources.

This is happening due to market forces, and again, we think it validates the fact that clean technologies are attractive on their own face. We do believe, however, that there are many things that can and must be done to make sure that these technologies, utilizations are fully realized, and especially when one looks at what is happening internationally. We recently participated in the INC Conference in Geneva, and stated, put forward six principles that we felt were important with respect to—that all countries should adopt with respect to the implementation of their plans. They are essentially aimed at ensuring that the climate is right for the implementation adoption of sustainable technologies and services.

We recognize that ultimately private capital is what is going to determine what investments are made here and throughout the world. But when it comes the emerging technology—emerging countries, we recognize that initially that capital infusion is going to be heavily influenced at least at the margin, by what countries or what public capital decisions are made.

And so we believe it is very important that these multilateral, bilateral institutions put forward not just rhetoric, but programs that clearly are consistent with a notion of reducing CO_2 emissions. In the meantime, life goes on and members of our—of my association have been very busy, both here domestically and abroad, in projects, some of which has public capital support, but many of them are solely private capital programs.

I just wanted to list a few examples: Honeywell has recently upgraded or in the process of upgrading a district heating system in Krakow, Poland, and it is very similar to the one you described, Governor. They substituted new, efficient boilers, controls and have backed out, reduced the amount of power needed, the size of the boiler substantially and have had very significant reductions in air pollution and energy costs.

Enron Corporation is constructing a natural gas pipeline in Argentina that is adding significantly to the natural gas capacity and thereby reducing Argentina to rely on more carbon-intensive sources.

Another company is Bergey Windpower is marketing small wind turbines for distributive power in countries like Indonesia and Mexico. They have proven to be very economical and to reduce greenhouse emissions.

Kenetech Power has begun a joint venture project in the Ukraine that will help offset the need to generate electricity from existing, inefficient and unreliable power plants.

And lastly in the Philippines, Magma Power is constructing a geothermal plant to provide the country with environmentally benign, domestic-available energy power sources. And I think these are just illustrative, and I do have a book that we put together that describes these projects, as well as many others, both domestically and internationally, and I will leave that for you.

Let me quickly address the joint implementation issue. We believe, like many, that joint implementation offers tremendous promise. In theory, it is too good to be true, and I guess that is part of the problem right now is there is a lot of misunderstanding about what JI can and should do.

And I think, again, we need to—the only way to make this work is to come forward with some very specific projects on a pilot basis, make them very good, like the one you described, Governor, and overcome this inertia or distrust that exists. But personally, I think that—I know our companies are not really waiting for JI because we realize if we wait for JI, the markets will have come and gone. I think, therefore, one has to get on with the business of doing business where there are opportunities to go through a pilot program, you should do them, make them good, and then keep your fingers crossed.

That concludes my remarks.

[The prepared statement of John Hemphill follows:]

THE BUSINESS COUNCIL FOR A SUSTAINABLE ENERGY FUTURE

Testimony for the
Energy and Power Subcommittee
of the House Energy and Commerce Committee

Concerning
US Government Greenhouse Gas Mitigation Efforts

October 6, 1994

INTRODUCTION

The Business Council for a Sustainable Energy Future is pleased to submit testimony to the Subcommittee on Energy and Power of the House Energy and Commerce Committee concerning the US Government's greenhouse gas mitigation efforts and the important role we see industry playing in this effort.

I am John Hemphill, Executive Director of the Business Council for a Sustainable Energy Future. The Business Council, formed in December 1992, is comprised of business leaders from the energy efficiency, renewable energy, natural gas and power generation industries who share a commitment to pursue a new energy strategy designed to realize the Nation's economic, environmental and national security goals through the rapid deployment of sustainable energy technologies and services -- that is, technologies that are economical, efficient, and low-polluting.

Members of the Business Council support the objectives of the international *Framework Convention on Climate Change* (Climate Treaty), including the long-term goal of stabilizing the concentration of greenhouse gases in the atmosphere.

The Business Council believes that the opportunity costs of delaying actions to achieve this goal are substantial. Furthermore, we believe there are cost-effective solutions available today to mitigate the growth in the concentration of greenhouse gases in the earth's atmosphere. The Business Council calls on the public and private sector to work collectively to ensure that these solutions are implemented.

The vision set forth by the Administration in its *Climate Change Action Plan* (CCAP) represents an important first step towards reducing US greenhouse gas emissions. The significant role that sustainable energy has in the government's plan for meeting its international treaty obligations is clear -- approximately 90 percent of the energy sector reductions are estimated to come from sustainable business activities such as those pursued by Business Council members.

Recent investment decisions of the US electric utility industry confirm the significant role sustainable energy will play in meeting our Nation's future power needs. In 1992, for example, over seventy percent of the electric industry's capacity additions were natural gas and renewable power plants.

POSITIONS ON CLIMATE CHANGE

At the August meeting of the United Nations' Intergovernmental Negotiating Committee, the Business Council recommended that governments adopt six principles when addressing global warming issues.

(1) Policies Should be Market-Based

To minimize economic distortion and to energize the financial resources and the organizational assets of the private sector, policies targeted to remedy global climate change, to the extent possible, should be market-based, taking into account the environmental externalities of energy use. Policy instruments should be used that provide economic incentives to deploy and to adopt clean, efficient energy technologies and practices.

Carbon taxes represent one market-based approach to reducing greenhouse gas emissions. Other market-based approaches focus on public/private partnerships to achieve economic and environmental goals.

A number of Business Council member companies, in fact, are participants in the government's voluntary public/private partnership programs to reduce greenhouse gas emissions. CCAP initiatives such as Climate Wise, the Motor Challenge, and Natural Gas Star have engendered broad support from Business Council members. The Business Council urges the Administration and members of Congress to continue supporting these important public/private initiatives.

(2) Clean-Energy Alternatives Should be Recognized

Technologies and services which have the potential to replace higher emitting technologies should be explicitly recognized. Demand-side and supply-side energy management should be key components of national action plans. Cost-effective, clean-energy technologies and practices deserve priority.

Current activities of Business Council members demonstrate the economic and environmental value of these technologies and services. For example, Business Council member SYCOM Enterprises recently has completed a high-efficiency lighting conservation project at the Meadowlands Racetrack in New Jersey that is expected to reduce costs by $5 million and energy use by 4.5 million kWh per year over the course of its ten year life.

The Sacramento Municipal Utility District (SMUD) has used greater reliance on renewables and efficiency to dramatically improve its ability to serve its customers. Today, SMUD gets nearly half of its energy from renewables and efficiency sources. By the turn of the century -- just six years from now -- SMUD expects to get 75 percent of its power from efficiency and clean-energy sources.

CCAP recognizes that the US government must also play a role in the commercialization of clean-energy alternatives. It promotes the commercialization of high-efficiency natural gas technologies such as fuel cells. It also establishes a renewable energy collaborative and encourages renewables technology demonstrations to enhance renewable energy commercialization.

Further, CCAP promotes greater energy efficiency through initiatives such as the Motor Challenge, Green Lights, Energy Star Buildings, and various Golden Carrot market pull programs. Of course, the effectiveness of these programs depends in large part on the support they receive from Congress. This year the Business Council testified before Congress urging that these programs receive adequate funding to accomplish their greenhouse gas emissions reductions goals.

(3) Energy and Environmental Planning Must be Coordinated

Energy and environmental planning cannot be separated. The planning of energy projects in support of economic growth must explicitly recognize the relative environmental consequences of alternative actions, including their impacts on global climate change.

Business Council members like the New York Power Authority (NYPA) and United Solar Systems Corporation (USSC) are demonstrating the importance of accounting for environmental costs when developing energy projects. NYPA is using a cutting-edge photovoltaic array manufactured by USSC to test photovoltaic performance in a utility interconnected system. Environmentally sustainable solar-powered photovoltaics hold great promise for cost-effectively meeting a significant portion of US energy needs. NYPA's evaluation will serve as model for energy planning that seeks cost-effective, environmentally benign alternatives to traditional fuel sources.

CCAP recognizes the need for this kind of effort. CCAP encourages the utility industry to use integrated resource planning to identify their best cost resource needs. Another initiative in the Plan calls for Federal regulatory reform to promote natural gas use as an environmentally preferable fuel. Finally, CCAP promotes increased reliance on renewable power sources such as wind, photovoltaics, and geothermal in grid-connected utility applications. Each of these programs can make important contributions to reducing US greenhouse gas emissions.

(4) Progress Must be Measured and Adjustments Made

Implementation of global climate change mitigation strategies must be built on good monitoring systems. If strategies for reducing greenhouse gas emissions are not achieving desired results, policies must be modified and results monitored.

There is general consensus among those of us that follow this issue that the US may fall short of its emissions reduction goal -- returning US emissions to their 1990 levels by the year 2000. The United Nations recently released a report stating that scientific evidence suggests additional greenhouse gas emissions reductions efforts may be necessary to adequately respond to the threat of global warming. If it appears additional emissions reductions measures are necessary to adequately combat global warming, the US government must be prepared to take aggressive actions to ensure that US greenhouse gas emissions are reduced.

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In this regard, the US Congress should be prepared to demonstrate leadership on climate matters. Congressional hearings on climate-related topics are an important component in increasing public understanding of climate issues. Members of Congress and the Administration should work together to ensure that key provisions of CCAP receive adequate support.

(5) Technology-Transfer Should be Encouraged

A coordinated effort to deploy clean-energy technologies throughout the developing world could substantially lower global greenhouse gas emissions while promoting sustainable economic development.

Business Council members are working in Central and Eastern Europe, the Middle East, Asia, and Central and South America to ensure that clean-energy technologies and services are available to meet the growing energy needs of developing countries. Many specific examples come to mind. Through a USAID program, Honeywell Inc. is upgrading the district heating system in Krakow, Poland, reducing Krakow's air pollution and energy costs. Enron Corporation is constructing a natural gas pipeline system in Argentina, adding significant natural gas capacity to an economy that relies on natural gas for over 40 percent of its energy requirement. Bergey Windpower is providing wind turbines for distributed power applications -- such as water pumping -- and hybrid electrification systems in countries such as Indonesia and Mexico. Kenetech Windpower has begun a joint venture 500 MW wind project in the Ukraine. Energy Conversion Devices is promoting a joint venture defense conversion project in Russia that will bring state-of-the-art photovoltaics production to that country. In the Philippines, Magma Power is constructing an geothermal power plant to provide the country an environmentally benign, domestically available source of power.

These projects illustrate the kinds of US clean-energy international business activities that can meet developing countries' energy needs in an environmentally responsible manner. Much more remains to be done if we are to successfully decouple the energy used to fuel economic growth from environmental degradation.

The US Government must take a leadership role in ensuring that clean-energy technologies and services are available to meet the developing world's growing energy needs. Members of Congress, the Administration and the US private sector must work together to devise appropriate measures for bringing state-of-the-art clean-energy technologies and services to developing world markets.

(6) Development Assistance Should Support Economic and Environmental Objectives

Private capital ultimately will determine what type of energy investments will be made over the long term. However, public support, especially in emerging economies now making crucial decisions about their development path, can provide important incentives for pursuing sustainable economic growth.

The Business Council urges the US government to ensure that its bilateral aid policies support the goals of the Climate Treaty. The Business Council also urges the US government to make its support for multilateral lending institutions contingent on their adherence to the objectives set out in the climate treaty and in CCAP.

JOINT IMPLEMENTATION AND CLIMATE CHANGE

Joint implementation promises to be an important vehicle for promoting clean-energy technology transfer from developed countries to the developing world. However, standardized measurement, monitoring, certification, and administrative procedures for joint implementation projects must be developed. Likewise, liability rules and responsibilities must be defined.

The Business Council welcomes the Administration's efforts to gain a better understanding of this issue through the US Initiative on Joint Implementation (USIJI). However, the Business Council urges the US government not to view joint implementation as a substitute for taking cost-effective action to reduce domestic emissions of greenhouse gases.

CONCLUSION

The Business Council and its members will continue to work with the government officials and other interested stakeholders in achieving the emissions reductions goals of the Climate Treaty. Specifcally, we stand ready to participate with like-minded organizations to demonstrate the economic viability and environmental benefits of clean-energy technologies and practices.

Members of the Business Council believe an environmentally and economically sustainable energy future lies within our grasp. We urge the Administration, the US Congress, and stakeholders in the climate debate to work to make that future a reality.

Mr. SHARP. Well, thank you very much.

We had promised to be out of the room at 3, and it is 5 after. So I think I am going to have to forego questions at this point.

But we appreciate very much having your testimony and making it a part of our record and note that the know that the debate will go on.

Thank you very much for being with us.

[Whereupon, at 3:05 p.m., the hearing was adjourned.]

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